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STONINGTON ANTARCTIC EXPLORERS.*

BY

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I.—INTRODUCTION.

This article is based on letters and papers belonging to Mrs. Richard Fanning Loper, of Stonington, Connecticut, who inherited them from her father, Captain Alexander Smith Palmer. Mr. Loper, her husband, is a descendant of Edmund Fanning. Some of these papers are the originals; some are copies; two or three are newspaper cuttings. As a rule the paper is worn and discolored, and the ink is faded, so that the contents are not easily decipherable. Unfortunately, these papers are but few in number, as most of the Antarctic records of the Palmers were burnt in the fire which destroyed Captain A. S. Palmer's house in Stonington in 1850. A complete account of the explorations of the Palmers, therefore, cannot be built up from these papers and they should be read in connection with Edmund Fanning's history of the early sealing voyages. Nevertheless, they afford much valuable, fresh information about four of the most fruitful exploring voyages made by Americans outside of the United States, and they also throw many new side lights on the formerly important, but now forgotten, sealing industry in the South Seas. Mrs. Loper kindly entrusted her papers to me to edit, and in almost all cases I publish them verbatim.

* Illustrated by Antarctic Chart opposite p. 536.

II.—The Palmers and Benjamin Pendleton.

Among the explorers, born and bred in the United States, who should be remembered and held in honour by American geographers, there are several who hailed from small United States ports, and who, in the course of mercantile voyages, made some important geographical discoveries.

Two of these men, Nathaniel Brown Palmer and Alexander Smith Palmer, were brothers. On their father's side, they were descendants of Walter Palmer, who landed at Salem, Massachusetts, in 1629, and on their mother's side they were descendants of the Brown family of Rhode Island.

The elder brother, Nathaniel Brown Palmer, was born August 7, 1799, and died June 21, 1877, in San Francisco, Cal, on his return from a trip to China, which he made for the sake of his nephew's health. He married, Dec. 7, 1826, Eliza Thompson Babcock, who died in April, 1872.*

Nathaniel B. Palmer, who was familiarly known as "Captain Nat," went to sea in 1813, and was first employed in the coasting trade from Maine to New York; in 1818 in the schooner *Gleaner*. In 1819 he was second mate on the *Hersilia*, Captain James E. Sheffield, the first American vessel to reach the South Shetlands. On July 28, 1820, he sailed in command of the *Hero*, $44\frac{40}{95}$ tons, and on this cruise discovered Palmer Land.

On July 21, 1821, he sailed in command of the *James Monroe*, and on this cruise coasted along the northern shore of Palmer Land, and in company with George Powell, an English sealer, discovered the Powell Group of islands, usually miscalled the South Orkneys. On June 14, 1822, he was at St. Bartholomews. In 1824 he made two voyages in the *Cadet* to Chagres, the Spanish Main, etc. In 1824 he sailed in command of the *Cadet* to Carthagena. Thence he took General Bolivar's army to Chagres. Then he carried Spanish prisoners from Chagres to St. Jago. In returning to New York, the *Cadet* went ashore and was lost on the New Jersey coast, Nov. 24, 1824. After this he was captain of the brig *Tampico*, and made several voyages to Carthagena and other ports in Columbia. Then he took command of the brig *Francis* and made voyages between New York, Mobile and Europe, up to 1829.

Between November or December, 1829, and about 1833, he made two voyages in the *Anawan* to the South Seas. After this he commanded numerous packet or clipper ships; in 1833, the *Huntress* or

* These notes about Nathaniel B. Palmer are extracted from three papers in an unknown handwriting, and a short account in the New York *Sun* of July 8, 1877.

Huntsville of the Collins Line; in 1835, the *Columbus,* in the Liverpool trade; in 1837, the *Garrick,* of the Collins Line, to Liverpool; in 1841, the *Hibernia,* to Liverpool; in 1843, the *Paul Jones,* Boston to China; in 1844, the *Honqua;* in 1847, the *Sam Russell;* in 1849, the *United States;* in 1849 and 1852, the *Oriental;* and in 1856, he made his last voyage as a sea captain.

Alexander Smith Palmer was born at Stonington, Conn., Jan. 26, 1806, and died in 1894. He married Miss Priscilla Dixon, on June 17, 1837.*

In June or July, 1821, he went to sea in the capacity of a so-called "boy" in the brig *Alabama Packet* on a sealing expedition to Chile, Peru and the South Shetlands. He returned in June, 1823.

On June 5, 1824, he sailed with Captain N. B. Palmer on the *Cadet* to Carthagena and Chagres. From October 1 or 27, 1827, to June, 1829, and from October 2 or 15, 1829, to June 24, 1831, he commanded the *Penguin* in two sealing voyages to the South Sea and the Antarctic Ocean.

Between September 1831 and July 1, 1832, he commanded the *Charles Adams,* and with the schooner *Courier,* John S. Barnum, master, as tender, made a sealing voyage to the Falklands and the South Shetlands. The cargo was one of the largest ever brought to Stonington, full of oil and with one thousand Shetland fur seal skins. The schooner returned home the following spring with 2,500 fur seal skins.

Between September 8, 1832, and September 1, 1833, he commanded the *Charles Adams* on another voyage to the South Shetlands.

From 1834 to 1838, he commanded the *Louisville,* sailing between New York, New Orleans and Liverpool; from 1839 to 1841, the *Garrick,* between New York and Liverpool; from 1841 to 1845, he commanded the *Southerner* between Charleston and Liverpool. From April, 1845, to March, 1846, he took the *Honqua* to Canton and brought back the first "Shanghai fowl" to the United States. He again commanded the *Southerner,* and in 1848 stopped going to sea.

Captain A. S. Palmer's home in Stonington was destroyed by fire, Nov. 15, 1850, and many valuable Antarctic records were burnt. In a letter, on which is printed at the top: "House of Representatives, Connecticut, Committee on School Fund, Hon. L. L. Palmer, of Stonington, House Chairman"; dated March 4th, 1887, addressed to Hon. G. V. N. Lothrop, minister plenipotentiary to St. Petersburg,

*This account of A. S. Palmer is based mainly on a short manuscript "Life of Capt. Alexander S. Palmer, written by his son, Louis L. Palmer, 1806–1894."

Russia, and signed "Louis L. Palmer," Mr. Palmer asks for information about a Russian expedition to the Antarctic in 1820, and says *inter alia:*

A disastrous fire destroyed the house of Capt. A. S. Palmer, in which were stored logs, papers, and curiosities gathered by the two brothers in their many voyages. The written documents are missing.

Captain A. S. Palmer served as State Representative three times, in 1857, 1858 and 1875; and twice as State Senator, in 1876 and 1877. He was chairman of the Committee on Temperance and Capital Punishment in 1876, and chairman of the Committee on Agriculture in 1877, when was introduced the agricultural experimental station, and he was mainly instrumental in securing the passage of the game laws.

Benjamin Pendleton was another Stonington captain who took a prominent part in the exploration of West Antarctica. About his life there are so far no records, but he is mentioned repeatedly in Fanning's "Voyages," and an United States "Executive Document" makes it almost certain that he discovered the southern end of Gerlache Strait, and was the first to sight Graham Land.*

III.—Voyage of 1819-1820.

Four voyages of Stonington sealers in 1819-1820, 1820-1821, 1821-1822 and 1829-1830 were especially fruitful in geographical discoveries. They are all briefly described in Edmund Fanning's "Voyages Round the World."

In 1819-1820 the brig *Hersilia* of Stonington reached the South Shetlands. Edmund Fanning claims the credit for starting this expedition, giving as his reasons his knowledge of Gherritz's discovery of land south of Cape Horn, and because he had seen icebergs come floating to South Georgia after west-south-west gales. While his account of the trip is evidently fairly accurate, it must be remembered that he is only telling at second hand of the experiences of others.

A paper in manuscript, however, gives a decidedly different account of the sailing of the *Hersilia* to the Shetlands, the credit of which is attributed to Nathaniel B. Palmer. This paper reads as follows:

"On this voyage he and a sailor were left upon one of the Falkland Islands to obtain provisions for the brig, while the *Hersilia* went in search of the fabulous Auroras. Soon after the departure of the brig, the *Esprito Santo* from Buenos Ayres hove in sight off the island, and 'Young Nat,' as he was then called, piloted her into the harbour, and found that she was bound to a place where there were

* Edwin Swift Balch, "Antarctica."

thousands of seals, but refused to divulge the situation. Three days after, the *Hersilia* returned, and Young Nat told Capt. Sheffield about the *Esprito Santo* and said he could follow her, and find the sealing ground. Capt. Sheffield, having great confience in his second mate, followed his advice, and in a few days discovered the South Shetlands, at that time unknown to the continent of North America. The *Esprito Santo* was anchored there, and much surprised to see the brig, but their admiration for 'Young Nat's' skill was so great that they even assisted in loading the *Hersilia,* and she returned home with 10,000 of the finest skins."

There is also a letter, signed "J. N. Reynolds," addressed "to Capt. N. B. Palmer," and dated "New York, Augt. 10th, 1834." It is in two handwritings and two inks, and is, therefore, probably a copy, although it may be the original. In this letter Mr. Reynolds makes a statement which tends to show that Fanning's account of the voyage of 1819 is not entirely accurate, for he says: "Fanning has given a new version to your first visit to the Shetland Islands. Have you ever seen the old Dutchman's chart. I don't much believe in it." Mr. Reynolds also handles Captain Benjamin Morrell rather severely, saying that "his descriptions have more poetry than truth."

IV.—Voyage of 1820-1821.

The voyage of 1820-1821, under command of Captain Benjamin Pendleton, is described in Fanning's "Voyages." The South Shetlands were visited, and the mainland of West Antarctica sighted for the first time. Fanning's account states distinctly that Captain Pendleton first sighted this land from Deception Island; Mrs. Loper, however, informs me that she has often heard her uncle, Nathaniel B. Palmer, who was an unusually keen-sighted man, tell how he first sighted Palmer Land from Deception Island. Mrs. Loper owns the log of this cruise; only remarks about the weather and the sea are entered during the time in which this exploration was made; a number of pages, however, are torn out at the end of the log, and it is known that on these was written a full account of the discovery.

A note, probably in the handwriting of A. S. Palmer, says that the sloop *Hero,* N. B. Palmer, master, sailed July 31st, 1820, from Stonington in company with four other vessels. They sighted the South Shetlands on Nov. 10, 1820, and Mount Pisgah on Nov. 25, and anchored the fleet in Port William, afterwards called Yankee Harbour. Capt. N. B. Palmer sailed for home on Feb. 9, 1821, and for seventy odd days there is no daily record of his movements during this voyage on which he discovered Palmer Land.

On a sheet of paper are the following notes, probably also written by A. S. Palmer, when he was an old man:

"Yankee Harbor, South Shetlands,
" In Latt. 62° 30 South.
." Longd. 60 22 west.

"N. B. Palmer informed the Russian admiral Bellinghausen. He went to Latitude 68° 00. To Palmers Land, The nearest continent to the South Pole. '330 miles south of Yankee Harbor.'"

The following is the remaining fragment of a letter, apparently in A. S. Palmer's handwriting:

"STONINGTON, April 30, 1879.

"MY DEAR FRIEND:

"Your letters of 16th & 17th inst. have been received and contents read with pleasure. I should have answered, but owing to sickness in the family, have been completely out in carrying on my correspondence.

"Your inquiry as to Capt. Weddell. Capt. W. was in command of an English sealing Cutter fitted out for a sealing voyage from London (I think her name was Beaufoy, I will find out). My brother discovered Palmer Land latter part of January or first part of February 1821. He proceeded as far south as 68° south Lat. in Long. 58° & 60° & odd west of Greenwich. No one had ever circumnavigated the Shetland Group before. Capt. Cook in the years of 1773 & 1774, in search of new land in Longde of 110° west, and Longe. 40° east from Greenwich reached much higher latitude, I believe he went to 74° south."

These two notes would tend to show that Nathaniel B. Palmer on one of his voyages sailed into the Weddell Sea as far as 68° south latitude.

On this trip, Capt. N. B. Palmer happened to meet the Russian ships under Admirals Bellingshausen and Lazarew under most dramatic circumstances. His own remembrance is preserved in the following paper, which cannot be taken as more than a sketch, given orally many years after the event by Capt. Palmer and jotted down from memory by Mr. Bush:

"From a letter written by Mr. Bush, U. S. consul at Hong Kong, China.

"The account of the Discovery of Palmer's Land, in the South Sea.

"It was," says Mr. Bush, "at the time of his (Capt. N. B. Palmer) second voyage to China. He was in a clipper ship, the *Honqua,* a vessel of his own designing, and owned by A. A. Low & Brothers and himself.

"He was my guest at dinner in Hong Kong, and after much persuasion, I heard him repeat the following to Admiral Sir John

Francis Austin, to whom he was presented by myself as the discoverer of "Palmer's Land" the southern point of the globe. I pass over his account of the voyage of the *Hero* to the South Shetlands, 1821, the scarcity of seal there, and his determination to seek better hunting grounds, but I can never forget the enthusiasm he manifested when he said: 'I pointed the bow of the little craft to the southward and with her wings spread, mainsail abeam and jib abreast the opposite bow, she speeded on her way to new sealing grounds like a thing of life and light. And she was light with her flowing sheet, she seemed to enter into the spirit which possessed my ambition, flew along the wave and over billow, until she brought us in sight of land not laid down on my chart. I cruised for several days in order to satisfy myself that it was not an island. I ran into several bays without meeting with seal and headed northward, drifting along under easy canvas, laying to at night, which consumed the majority of the day: most of the time the mist was so dense I could not see the lookout on the forecastle. One night I came on deck at midnight, relieved the mate and took the watch: I struck one bell, which brought a response that startled me; but I soon resumed my pace, turned my thoughts homewards and applied myself to the occupation of building castles in the air, till the binnacle time keeper told the first hour of the day.

'I struck the two bells that were answered by a human hand; though I could not credit my ears, and thought I was dreaming; excepting for the screeching of the penguins, albatross, pigeons, and mother carys, I was sure no living object was within leagues of the sloop, but the sound of bells continued until the sun lifted the fog. My chief officer, who laughed at the idea of a human soul being close at hand, insisting that the sound was 'tricky' called me at seven bells during his watch, saying that voices were heard, and before the trencher board was laid, the fog lifted, presenting to our view a frigate on the starboard bow, and a sloop of war on the lee quarter, with Russian colors flying. Close alongside was a boat with an officer in full uniform who stepped into the waist of the sloop, and gave me a message from Admiral Krusenstien of his Russian Majesty's frigate *Rostok,* requesting that I would repair on board of his ship. I assented at once, entered the boat that was laid alongside, mounted on deck and with 'sou-wester' on head and a seal skin coat and boots, I was ushered into the presence of the venerable commander, who was sitting at the table in his cabin, himself and a group of officers in full dress. The gray headed mariner arose, took me by the hand, saying, through the medium of the interpreter;

'You are welcome, young man, be seated,' he placed a chair by his side and put the following questions to me:

'What is your name?
'Nathaniel B. Palmer.
'Where are you from?
'Stonington, Conn. U. S. A.
'The name of your boat?
'*Hero,* Sir.
'What are you doing here?
'On a sealing expedition.
'What success?

'I gave him an account of my voyage, tonnage of sloop, number of men and general detail, when he said: 'How far south have you been? I gave him the latitude and longitude of my lowest point, and told what I had discovered. He arose much agitated, begging I would produce my log book and chart, with which request I complied, and a boat was sent for it. In the meantime luncheon was served, many questions put concerning the seal fishery, population of my hailing port and etc. When the log book and chart were laid upon the table he examined them carefully without comment, then rose from his seat saying:

'What do I see and what do I hear from a boy in his teens: that he is commander of a tiny boat the size of a launch of my frigate, has pushed his way towards the pole through storm and ice and sought the point I in command of one of the best appointed fleets at the disposal of my august master have for three long, weary, anxious years, searched day and night for." With his hand on my head he added: "What shall I say to my master? What will he think of me? but be that as it may, my grief is your joy. Wear your laurels. With my sincere prayers for your welfare, I name the land you have discovered in honor of yourself, noble boy, Palmer's Land.'

"And to my old and loved friend," adds Mr. Bush, "is due the honor of this discovery, though England, I am sorry to say, through one of her naval officers, attempted 'to steal the thunder.' Which Admiral Austin assured Captain Palmer that he would endeavor to correct and give to him the proper credit."

An original note, whose handwriting is unidentified, but which is by one of the sealers, tells the story of what the sealing fleet did in the line of business during the voyage of 1820-1821. It is no wonder the fur seal was exterminated:

"The sloop *Hero*, Capt. N. B. Palmer, mate Phineas Wilcox, tender to Brig *Frederick*, *Hersillia*, Schooners *Express*, *Ephraim Williams*, and *Fregift*, Thos. Dunbar master, at New South Shetlands, Novr. 1820. The *Hero* brought camps on the beach & put on the different vessels the following Fur seal skins—

" November 27, 1820. Sloop *Hero* from Camp arrived with 465 Fur skins prime skins.

Decr. 2d.	sloop from camp with.....	616 Prime fur skins.
Sloop arrived from camp Decr. 5th.....		906 "
Decr. 9th	sloop from camp with prime.....	9790 "
Decr. 12th	sloop from camp with "	5616 "
Decr. 16	sloop from camp with "	6865 "
Decr. 19	sloop from camp with "	8229 "
Decr. 30	" " " " "	8000
Jany. 9, 1821	" " " " "	6101
" 12,	" " " " "	2800
		3
		49223*
		465
Novr. 27,	boats.....	1207
		50895

"February 6, 1821, took on board Brig *Frederick*, Capt. Ben. From Brig *Hersillia*, Capt. James Sheffield, 12000 prime fur seal.

"The *Hersillia* is bound to Isld. St. Marys in Pacific hair sealing."

The outfit for a sealer is given in the following original memorandum of the sloop *Hero*, for the voyage of 1820-1821, written in faded ink on a tattered old paper:

"MEMORANDUM SLOOP 'HERO.'"

"Two Composition Rudder Braces & Two do. pintles for hanging Ruder [*sic*] with the Bolts & nails for do.

200 Sheets half 18z, half 20z Best London Copper.

150 2 Inch composition nails for sheathing coppering.

150 1 Inch " do for coppering.

300 Best smoothing sheathing paper.

7 Bolts best Russia Duck 6 Ditto Bear Rowens.

A Sheet chart or charts of So. America from the Equator to the highest South Latitute beyond Cape Horn. These can be got at Pattons. A sheet of charts of all the Atlantic Ocean.

"FOR BOTH BRIGS.

"60 hhds Navy Bread; 60 bbl. Mess Beef; 40 bbl. Mess prime Pork; 4 bbl. white Beans; 4 do Peas; 4 do Vinegar; 10 qt. Mustard; 2 gr. chest Campay Tea; 30 do Pepper; 4½ bbl. Rum; 4 bbl. Gin; 6 tt. Codfish; 2 Boxes dip candles; 1 do. sperm to be divided; 2 Boxes Soup [*sic*]; 8 bbl. kiln dried corn meal; 4 bbl. corn; 2½ cords nut wood; ½ do. short white ash; 4 cords oak wood; 50 bus. potatoes; 3 bbl. dried apples; 5½ bbl. Rice; 12 bbl. Flour; 20 bbl. Molasses; 220 tt Coffee; 20 – 10 tt Kegs Butter; 4 Small Grind stones; 600 feet Ceder [*sic*] Boards; 50 tt

* This addition is not correct, the sum being 48,926, making the sum total 50,598.

XUM

Boat nails; 100 assorted nails 3 spikes; 20 – 10 feet Boat oars; 40 – 16 do.; 3 – 24 feet Stering [*sic*] oars; 3 – 22 feet do.; 3 – 22 feet do. [*sic*]; 3 – 21 do. do.; 2 – 10 G. Kegs lamp oil; 1 – 5 do. do.; 6 tt Lamp wicks; 15 Kegs white lead ground in oil; 5 Kegs yellow paint; 6 Kegs Black do.; 2½ bbl. paint oil; 20 assorted fish lines; 18 Log lines; 2 – 14 secmd glasses; 2 – 28 do.; 2 smith bellows; 2 do. anvils; 2 do. vises; 1 doz. assorted files; 5 Boat anchors; 3 of 28; 2 Cod whale warp; ——— Carpenter; Armorers Tools; 2 doz. assorted Gins [torn off]; 8 wood axes; 5 boat hatchets; 125 tt sheat Leads; 25 tt bar Leads; 3 King arms; 3 Kegs fowling [torn off]; 15 Bags oss [torn off]; 18 tt musket [torn off]; 3 bbl. charco [torn off]; 10 bus well di [torn off]; or Rise; 5 doz. Fowls; 200 — hoop poles; 8 doz. skinning knives; 6 doz. steels for do.; 5 ———; 2½ doz. skinning knives to be made by R. Brown; ½ doz. Beaming [?] knives to be made by do.; 5 bbl. Tar; 2 bbl. Rum; 2½ bbl. Teneriffe wine; 5½ barrel sugar."

"Memorandum Sloop *Hero*, 1820."

V.—Voyage of 1821-1822.

The voyage of 1821-1822, told of also by Fanning, was another sealing cruise to the Shetlands. Nathaniel B. Palmer was detached and sent to explore the mainland, which he did, sailing along the northern sea front of West Antarctica. Afterwards he met Captain George Powell, an English sealer, at the Shetlands, and made with him a voyage to the eastward, during which they discovered the Powell Islands.*

The following "orders" are from the original letter to N. B. Palmer:

"Capt.
Nathaniel B. Palmer
Commander of Schooner
James Monroe,
Orders"

"Stonington, July 21, 1821.

"Capt. Nathl. B. Palmer: Sir:

"You will proceed to sea with the sloop *James Monroe* the first favorable opportunity in company with the Brig *Alabama Packet* and make all dispatch for East harbour (if you get separated from the *Alabama Packet*) on the north side of Cape St. Johns in the Island of Statten Land, on your arrival at this East harbour (which lays 2 or 3 miles from the end of Cape St. Johns on the north side of the Cape) if you do not find Capt. Benjm. Pendleton or Capt. Wm. A. Fanning there you will then (after taking in what wood and water you stand in need of) if not joined by one of them proceed with all dispatch for Deception harbour in New South Iceland, where you will employ your crew in taking Elephant blubber and mincing & filling your casks with mixed blubber & procuring seal skins until you are joined by Captain Pendleton or Fanning. It is expected you will use your best judgment to keep your crew in harmony & good spirits. Good usage & strict Discipline will best do this and enable you to procure a good voyage or full cargo of skins and oil which is our first object & wish, and we expect your best

* Edwin Swift Balch, "Antarctica."

endeavour at all times to do this. You will consider yourself & crew & vessel mated with the Brig *Frederick* & *Alabama Packet,* schooners *Express* & *Free Gift* & Sloop *Hero,* and you will share with them in proportion to the number of their & your crews as Capt. Benjn. Pendleton shall direct and you will at all times consider yourself & vessel under his orders and directions. But in case of his inability or absence you will consider yourself & vessel under the orders & directions of Capt. William A. Fanning & govern your acts & proceedings accordingly and as your vessel is fitted and sent out for the express purpose to act as a Tender or Shallop to the vessels of this concern you will at all times consider the importance of your arriving at Deception harbour by the time that the Brig *Frederick* and *Alabama Packet* does, and with this [ink blot] recommend to you to use your best endeavours to keep in company & not get separated from the Brig *Alabama Packet* in your passage out. You will be prudent & carefull in the expenditure of your provisions & stores & do your best to obtain a good voyage.

"Wishing you health & prosperity, we are your sincere friends,

"E. FANNING } Agents for the
"B. PENDLETON } Concern.

"P. S.—If any inability occurs to Capt. Nathl. B. Palmer, then the next commanding officer will govern himself strictly by the above orders.

"E. FANNING }
"B. PENDLETON } Agents."

The orders to N. B. Palmer to return are in Capt. Benjamin Pendleton's handwriting as follows:

"SHETLAND, Jany 25, 1822.

"SIR:

"You being ready you will proceed to sea & make all possible dispatch for the port of Stonington consistent with the safety of your vessel and cargo. Should necessity oblige you to stop I recommend [word illegible] having as little communication with the main as possible; I wish you to bear in mind the importance of as little detention as your situation will admit of.

"Relying on your ability & active exertions to effect a speedy close of the part of our expedition intrusted to your charge, I am,

"Sir, yr. obt. Servt., BENJAMIN PENDLETON.

"Capt. N. B. PALMER,
"Jas. Monroe."

The arrival of the fleet at the Shetlands is mentioned in the following note in the handwriting of A. S. Palmer:

"Arrived from Stonington, Novr. 1821, the following vessels of our fleet, on a sealing and oil discovering cruise:—

"Brig *Frederick,* Capt. Benjamin Pendleton.
"Brig *Alabama Packet,* Capt. William A. Fanning.
"Schooner *Express,* Capt. Thomas Dunbar.
" " *Fregift* " Benn. Cutler.
"Sloop *James Monroe,* " N. B. Palmer.
" " *Hero,* Capt. Harris Pendleton.

"Altogether took fifteen hundred Bbls. Elephant Oil and about fifteen hundred seal skins."

There is a short account of this voyage, signed by A. S. Palmer:

"STONINGTON, April 25, 1881.

"My first voyage from this port commenced July 21st, 1821, in the Brig *Alabama Packet,* Capt. William A. Fanning, master; William Pendleton, first mate; Mr. Coles of New York, 2nd mate; Robert Boltum, 3rd mate and carpenter: about twenty men and two boys, (self, one) bound to New South Shetlands in company with five other sail in same concern, viz., Brig. *Frederick,* Capt. Benjamin Pendleton, mates, 1st, Jonathan Pendleton, 2nd, Nathl. Durfy, 3rd, —— Cullom; Schooner *Express,* Capt. Thomas Dunbar, Schooner *Free Gift,* Capt. Benjn. Cutler, Sloop *James Monroe,* Capt. N. B. Palmer, mate John Dodge; Sloop *Hero,* Capt. Harris Pendleton, mate Phineas Wilcox. Three of the fleet returned home from South Shetlands, viz., the Schooners *Express, Free Gift* and Sloop *James Monroe;* the *Alabama, Frederick* and *Hero* went to the coast of Chili and Peru sealing. We loaded the *Frederick* at the Islands St. Mary and Mocha with 27,000 hair skins and the *Frederick* returned home. We sold sloop *Hero* in Coquimbo and took the crew on board the *Alabama.* We sealed down the coast of Peru after fur skins, returned home a few days short of two years, with 24 or 25,000 skins. This was my first voyage, and this journal was kept by Phineas Wilcox, mate of the *Hero.* Mr. Wilcox and self sailed nearly four years together in schooner *Penguin* sealing from 1827 to 1831.

"ALEX S. PALMER."

VI.—1827-1828.

In 1827-1828, Captain Alexander S. Palmer made a sealing voyage in the schooner *Penguin,* of 84 tons. She did not go to the Antarctic, but only to the Falklands and Staten Land. Whilst moored there in Port Hatches [?] the English ship *Chanticleer,* Captain Foster, happened to come there, and the following paper, probably in Captain A. S. Palmer's handwriting, describes the meeting:

"One Sunday a boat appeared in the mouth of the Harbor. Fearing a castaway, the *Penguin's* boat was at once manned. The new comers looked with some surprise if not darker feelings as the schooner's boat approached, the crew dressed in fox-skins caps with clothes somewhat of skins and the remainder made up of blue shirts and worse worn woolen. The sealers were sharply asked who they were; where is your vessel from. After a considerable conversation confidence arose. The new comers asked the sealers if they would come to the shore and from an eminence near by point out the country round about. After a long survey, lunch was proposed. On Capt. Palmer's invitation the lunch should be partaken of on board the schooner. The invitation was accepted and during the repast Capt. Foster asked if Capt. Palmer could pilot his ship

Chanticleer into Port Hatches. The feat was successfully accomplished, the two vessels remained for a month scarcely one hundred yards [apart] constantly visiting each other. The tides pour with great force through the Le Maire Straits, and sweeps by Dead Man's Island, which lies five miles north of Staten Land, a mighty current. When the wind and current are opposed the sea runs high and the whole space between the Island and Land is very rough. The *Chanticleer* was in the midst of it and was roughly tossed about by the seas. In fact when endeavoring to back to the *Chanticleer* the boat was several times near swamped. At the mouth of Port Hatches in the middle lies a high rock, and a line of breakers extending over the shore beyond it. Commander Foster twice asked Capt. Palmer if he was certain the ship *Chanticleer* could pass the breakers or if there was surely sufficient depth of water, and half willing, consented to proceed when positively assured by Capt. Palmer that the ship could enter with entire safety. Afterwards when anchored in the quiet harbor, with the ship at rest, Commander Foster expressed alike his relief and the enjoyment and comfort of such a snug harbor. The *Penguin* only had 16 men; 10 were sealing in the San Diegos. Five were sealing about Staten Land. Capt. Palmer piloted the *Chanticleer* out from the harbor. Capt. Foster gave him these drafts and then he rowed back to the *Penguin* (to the only live thing thereon, his dog) and to his own solitary confinement.

"However it may please you to know the *Penguin* cost about $1,500, her insurance was $7,000. The catch of this voyage was 4,000 skins. At the auction in Stonington held in July the sales amounted to over $19,000.

"This voyage was the pioneer large one that laid the early foundation of the wealth of Stonington."

About this meeting, Mrs. Loper also has the following original note:

"These are to certify the principal officers and commissioners of His Majesty's Navy that Mr. Alexander S. Palmer, Master of the American sealing schooner, the *Penguin* piloted His Majesty's sloop under my command, from her anchorage off Deadman's Island (Staten Island) the 26th of October, 1828, to the Harbour of North Port Hatchet (Staten Island), where he this day left her moored in perfect safety. Given under my hand on board His Majesty's sloop *Chanticleer,* at North Port Hatchet, Staten Island, the 28th day of October, 1828. Henry Foster, Commander."

The following original letter tells something of the value of seal skins at this time in New England:

"STONINGTON, 14 Sept. 1828.

"CAPT. A. S. PALMER: DR. SIR:

"Yours by the *Superior,* Capt. Nash, came duly to hand with the skins in good order which I have sold @ $5. The fur pups are not sold they are dull the Hair Pups brought 42½ cents they are an object to get all you can. Mr. Brown sold the Superiors @ 4 25/100 on an average which probably is as much as we could now get. Hope you will stay as long as you can to advantage & should you return bring the *Free Gift's* Skins & the *Harriott's.* Your friends have probably written & informed you of what may have transpired since you left.

"Yours, EPHM. WILLIAMS.

(Addressed to) "Capt. Alexr. S. Palmer,
"Schnr. *Penguin,*
"South Sea."

"Schr. *Harriott* }
"Capt. Pendleton" }

VII.—VOYAGE OF 1829-1831.

In the early months of the year 1830, an exploring voyage in search of Swain's Island was made to the westward of the South Shetlands. Fanning gives a few lines over the signature of Benjamin Pendleton about this voyage, which the latter says was made in the *Seraph* and *Anawan.* The following notes would seem to prove, however, that the *Penguin,* Captain Alexander S. Palmer, was the consort of the *Anawan.* The *Seraph* was certainly in the South Seas at this time, as is proved by the "Catalogue" of her seal skins printed further on, and she must have been some time in company with the *Anawan.* But whether the voyage in search of Swain's Island was made by the *Anawan,* the *Penguin,* and the *Seraph,* or only by the *Anawan* and the *Penguin,* is not absolutely certain. The evidence, however, favours the latter supposition.

On a sheet of paper is the following in the handwriting of A. S. Palmer:

"This statement of the cruise of the Brig *Anawan* of N. Y., Capt. N. B. Palmer, in company with the schooner *Penguin* of Stonington, Conn., Capt. Alex. S. Palmer. In the year of 1830 sailed in company from Isd. of Statenland near Cape Horn, Jany. 14, 1830, for the New South Shetland Islds where we remained looking for fur seal until 22 of February, 1830, when we sailed to the westward in search of Hn [?] Isld said to have been seen by a Capt. Gardner of Sag Harbor, Long Id. on his passage home from New Zealand. After a thorough search in parallel of Latitude from latde. of 63° to 50° S. to Long 116° West until March 23d in heavy gale, a cross ugly sea stove our boat & other damage. We bore up for the West coast of Chili.

"ALEX. S. PALMER."

On the same paper is the following account in an unknown handwriting:

"Brig *Anawan* Capt N. B. Palmer, Ion Pnl [?] in 1829 sailed from New York and went direct to Bonavista for salt. We left for Cape Horn, passing to the west [?] Staten Land, stopping at North Port Hatches on the north part of the Island. There we found the Schr. *Penguin,* Capt A. S. Palmer on a sealing voyage. This island is near the Straits of Magellan. The *Anawan* was there about three weeks. Left in coy. with *Penguin* for New South Shetland which we reached about January. We cruised outside there & finally went into Ship harbor where the Ship *Clothier* was lost. We took numbers of the Sea Elephant, for their tongues & flippers. After [a] full examination of the Islands, which are in latitude of 63°, we cruised to 116 W. L. [words omitted] of kelp, pigeons, & examined for 20 days for island. Turned north & touched at the Island of Mocha. We took 5m. Large droves of wild horses, but could not get them. Numbers of pigeons."

On another page of the same paper also is this account:

"Jan. 14th, 1830, *Anawan* and *Penguin* left Staten Land, Lat. 55 S. Long 65 W. Proceeded to S. Shetland Lat 63. S. Long 62. W. Left there Feb. 20, 1830, bound W. in search of land. Sunday Feb. 21st, 1830, moderate, Capt N. B. Palmer steps from jib-boom of *Anawan* on to the taffrail of *Penguin* and spends the day. The two vessels cruised (sailing W. in lat. about 60 and returning E. in about 54) in parallels of latitude from 61 S. to 54 S. sailing W. and Long. 61.44 W. to 104 W. and off the W. coast of S. America, Lat. 58 to Lat. 40, and Long. 103 to Long. 75 W. and anchored off Island of Mocha, April 3, 1830, having been on the cruise six weeks."

There is also a copy of an undated affidavit, in an unknown handwriting, from which the following is an extract:

"STATE OF CONNECTICUT,
"COUNTY OF NEW LONDON.

"Alexander Smith Palmer of said County and State on oath states * * * * * * * * this affiant further states that he made two voyages around and about Cape Horn, in the Schooner *Penguin* at the dates thereinafter named: on the first voyage, he sailed from the said port [Stonington] on October 1st, A. D. 1827; and returned in the summer A. D. 1829; sailed again in said *Penguin* October 1st, A. D. 1829; this affiant further states these facts are clear in his memory, but for greater accuracy he refers to the log of the *Penguin* now before him, that on January 5th, A. D. 1830, lying in Port Hatches, Staten Land, in the vicinity of Cape Horn, South America, the brig *Anawan* Nathaniel Brown Palmer aforesaid master, came in and anchored in said 'Port Hatches' said brig *Anawan* sailed from New York under command of said Nathaniel Brown Palmer in search of new land, south and south west of Cape Horn; said Nathaniel Brown Palmer was selected to command said brig *Anawan,* as it was known he had discovered Palmer's Land and said vessels sailed in company for the Shetland Islands, said masters intending after arriving at the Shetland Islands 'to seal' as it is termed, and then to depart from said

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Shetland Islands and search for new land; said master Nathaniel Brown Palmer and this affiant had heard that two captains, one named —— —— —— the other Gardiner, sailing southwest of Cape Horn aforesaid had reported that they had seen land; this affiant states that it was often said, by the sealers around Cape Horn, at that date, that there was land south-west of Cape Horn; this affiant saith that on January 20th, 1830, the said vessels arrived at Elephant Islands; the same being a portion of the South Shetland Island Group, and left said group February 23d, A. D. 1830, in search for land; going south to latitude 62.33, and west to longitude 103.03, and on March 19th, A. D. 1830 gave up the search, being convinced that the reported land was not there; this affiant states that on April 9th A. D. 1830, said *Penguin* anchored by the Island of Mocha; this affiant saith that no land was discovered, two voyages, as it is termed, were broken up, many of the crew disabled. This affiant states said cruise furnished an example that no sealer ever wished to imitate, namely to search for land south-west from Cape Horn, said affiant further saith said *Penguin* returned to said port of Stonington June 22nd, A. D. 1831. * * * * * *"

A paper in an unknown handwriting, which is said to be copied from the Stonington (Conn.) *Phenix,* of Wednesday, March 16th, 1831, consists of a long, rather rambling letter from Edmund Fanning, about the existence of land southwest of Cape Horn, about Captains Pendleton and Palmer and the American exploring Brigs *Seraph* and *Anawan.* He speaks of their only exploring to 90° odd west, and therefore that there was no contradiction with Captain Swain's discovery of an Island in 59½ south and 100 west, by dead reckoning. He also speaks as if Captain Swain's discovery had just been made public, and he is rather severe on Captain Swain for keeping it to himself. In this letter, Fanning does not seem aware of Capt. Alexander S. Palmer, having made this voyage in the *Penguin.*

The following is a printed advertisement:

"Catalogue of

"Fur & Hair Seal Skins;

"Cargo of the Brig *Seraph,* from the South Seas.
"To be sold at auction on Monday, August 29, 1831, at 2 o'clock P. M.

"The skins are warranted to run through the tiers as they appear on the surface. They will be sold in lots to suit purchasers. The payment to be made satisfactory previous to the delivery of the skins. Three days will be allowed the purchasers to comply with the terms of the sale, after which time, if not delivered, they will be resold at the option of the Agents ,the skins being at the risk of the purchaser from the time of sale. Terms at sale.

LOTS.	NO. SKINS.	DESCRIPTION OF SKINS WHICH ARE IN PRIME ORDER.	
1	208	Wigs 96 Clapmatches 89 Yearlings 23	[This is added in pencil. Also some more which is illegible.]
2	207	" 95 " 89 " 23	505 C. P. Williams
3	207	" 96 " 89 " 22	
4	207	" 95 " 89 " 23	
5	333	Small Yearlings.....	87 C. P. Williams
6	827	....	31 C. P. Williams
7	37	.....	1.87 Holmes
		HAIR SEALS.	
8	3639	Prime Clapmatches	89.10 E. Williams, 1000.
9	1541	Small do.	E. Williams 90. balance D. 55
10	7634	Yearlings and Pups	1000.54—1000.36—100.35.
11	70	Large Salt Bags	
12	5	Damaged Fur Skins	
13	19	" Hair and Goat skins.	
		Articles Ship Stores etc. Provisions, Bread, Molasses, etc.	

VIII.

Among Mrs. Loper's papers, about cruises and sealing in the Antarctic, are the following:

On a tattered worn old paper, a list of whaling cruises is written in faded ink, and among them two Antarctic sealing cruises are mentioned:

> "1821 Sloop *Essex*, Capt. Chester, N. S. Shetlands.
> 200 whale, also furs.
> "Sarah E. Spear, Bark 150 Pendleton.
> S. Shetland. Sept. 27. May 22. 53 (1853?)
> 530 (seal skins?)"

From a newspaper article "The Quest of the Seal," published in the *Journal* of Stonington about the 8th or 9th of January, 1889, and endorsed as from the pen of Henry G. Palmer, I quote some extracts, changing their order:

"But a few representatives of the crews engaged in sealing between 1820 and 1830 are now living, but among the number still residing in Stonington is Captain Thomas Davidson, who was one of the first men to enlist in the venture. He is now 86 years of age, and a remarkably well preserved person for one of his years. He is seen on the streets nearly every day, and his intellect is still unimpaired, and he daily reads the *Journal* without the help of spectacles. To him the writer is indebted for many of the facts contained herein.

Between 1820 and 1830 the Captain made five sealing voyages, and his description of the privations endured by the men engaged in the vocation at that time shows the dangerous and uncomfortable nature of the business. Then no fire was known on the vessels, only that used for cooking the food. Even the cabins were cold and cheerless, and after returning to the vessel from the labour of the day, the men would retire to their bunks as the only means of getting warm. Often a boat's crew would be left on an island for the capture of seals, and be obliged to subsist almost entirely on penguin eggs that could be gathered on the island.

"The largest number of seals ever captured at the Shetland Islands have been obtained from what is known as 'Round Point' and 'Cape Shirreff'. During the early years of sealing, large catches were obtained at both of these points; now but few, if any, can be found there. * * * *

"Since 1821, most of the seal skins have been procured at Cape Horn, as seals became too scarce at the Shetlands to warrant paying voyages from that quarter. The Cape Horn skins are, however, much inferior, as the fur is coarser, and while good Shetland skins are worth $65, Cape Horn skins of equal size would not bring over $10, the price for the last ten years ranging from $4.50 to $15. * * *

"Formerly the seals were captured by getting between them and the shore and knocking them down with clubs. Now, however, the constant warfare waged against them has made them wild and they are shot at long range, it being impossible to approach near enough to insure their capture in any other way. After a sealing vessel arrives in the vicinity of the seal rookeries, boats' crews are landed at convenient points for the capture of the coveted animals, and the vessel is taken to safe anchorage to await the result. The crew ashore have tents in which to live while in quest of the game. After this is secured the skins are taken aboard the vessel and packed down in a sufficient quantity of salt to preserve them until they are thoroughly cured so they can be shipped without any danger of spoiling before they arrive at their destination. Most of the skins are shipped direct from Sandy Point, on the coast of Patagonia, to London. * * * *

"Captain Buddington, of the schooner *Sarah W. Hunt*, just returned, has had an eventful voyage. The schooner left Stonington October 25 of last year and arrived at Cape Horn in sixty days. * * * At the Shetlands only 39 skins were obtained. The vessel then returned to Cape Horn, where they obtained 1,700 skins. * * * *"

IX.

List of American expeditions to the Antarctic, based principally on Fanning's "Voyages," Mrs. Loper's papers and Edwin Swift Balch's "Antarctica Addenda." "Journal of the Franklin Institute," 1904. This list is not complete, but it is fairly accurate.

1800. Swain Island discovered in about 59° 30′ south lat; 100° west long. Captain Swain.

Between 1800 and 1818. Swain Island sighted. Captain Richard Macy. Captain Gardner [?].

1819-1820. Voyage to South Shetlands.

Brig *Hersilia,* Captain James P. Sheffield; 2d Mate Nathaniel B. Palmer; Supercargo William A. Fanning.

1820-1821. Voyage to South Shetlands. Discovery of Palmer Land.

Brig *Frederick,* Captain Benjamin Pendleton.

Hersilia, Captain James P. Sheffield.

Schooner *Express,* Captain Ephraim Williams.

Freegift, Captain Thomas Dunbar.

Sloop *Hero,* Captain Nathaniel B. Palmer.

1821-1822. Voyage to South Shetlands. Coasting voyage along Palmer Land. Discovery of Powell Islands.

Brig *Frederik,* Captain Benjamin Pendleton; 1st Mate Jonathan Pendleton; 2d Mate Nath. Durfy; 3d Mate —— Cullom.

Brig *Alabama Packet,* Captain William A. Fanning; 1st Mate William Pendleton; 2d Mate —— Coles; 3d Mate Robert Boltum; Boy Alex. S. Palmer.

Schooner *Express,* Captain Thomas Dunbar.

Schooner *Freegift,* Captain Benjamin Cutler.

Sloop *James Munroe,* Captain Nathaniel B. Palmer; Mate John Dodge.

Sloop *Hero,* Captain Harris Pendleton; Mate Phineas Wilcox.

1820-1830. Thomas Davidson was on five sealing voyages.

1821. Voyage to South Shetlands. Sloop *Essex,* Captain Chester.

1822-1823. Voyage to Antarctic. Schooner *Wasp,* Captain Benjamin Morrell.

1822. Voyage to West Antarctica. Schooner *Henry,* Captain Robert Johnson.

1824 or 1826. Voyage south of New Zealand. Captain Robert Johnson—Lost.

1829-1830. Voyage to island archipelago in *circa* 27° West Long., 57° South Lat. Schooner *Pacific,* Captain James Brown.

1829-1831. Voyage to South Shetlands and to westward of South Shetlands. Brig *Anawan,* Captain Nathaniel B. Palmer. Schooner *Penguin,* Captain Alexander S. Palmer. Brig *Seraph,* Captain Benjamin Pendleton. Scientists John N. Reynolds, Watson. It is possible that the *Seraph* did not make the westward voyage with the *Anawan* and the *Penguin.*

1832-1833. Voyage to South Shetlands. *Charles Adams,* Captain Alexander S. Palmer. *Courier,* Captain John S. Barnum.

1839-1840. United States Exploring Expedition. Voyage to West Antarctica. The voyage to East Antarctica where continental land mass was discovered and named the "Antarctic Continent."

U. S. S. *Vincennes,* Captain Charles Wilkes, U. S. N.; U. S. S. *Peacock,* Captain William L. Hudson, U. S. N.; U. S. S. *Porpoise,* Captain Cadwalader

Ringgold, U. S. N.; U. S. S. *Sea-Gull,* Captain Robert E. Johnson, U. S. N.; U. S. S. *Flying Fish,* Captains William M. Walker, U. S. N., and R. F. Pinkney, U. S. N.

Officers: Lieutenant Overton Carr, U. S. N.; Lieutenant James Alden, U. S. N.; Commandant Samuel R. Knox, U. S. N.; Master James H. North, U. S. N.; Passed Mid. Henry Eld, U. S. N.; Passed Mid. William Reynolds, U. S. N.; Passed Mid. George M. Totten, U. S. N., and many other officers and scientists.

1842. Voyage to West Antarctica, probably as far as Alexander Land. Captain William H. Smiley.

1848. Voyage to Antarctic Ocean. *Junior,* B. S. Osbon.

1853. Discovery of Heard Island. Bark *Oriental,* Captain J. J. Heard.

1853. Voyage to South Shetland. Bark *Sarah E. Spear,* Captain Pendleton.

1874, 1875-1876, 1878, 1879-1880. Four voyages to West Antarctica, with landings on Palmer Land. Captain Andrew J. Eldred, generally in schooner *Thomas Hunt.*

1876-1877. Voyage to South Shetlands. *Florence,* Captain James Buddington; Mate —— King.

Francis Allen, Captain —— Glass.

1879-1880. Voyage to Powell Islands, South Shetlands and Graham Land. Schooner *Express,* Captain Thomas B. Lynch.

1888-1889. Voyage to South Shetlands. Schooner *Sarah W. Hunt,* Captain James Buddington. Buddington has made several other voyages.

1893. Voyage to Bouvet Island. *Francis Allen,* Captain Joseph J. Fuller.

DEVELOPMENT OF MAP-MAKING IN AUSTRIA.

BY

PROFESSOR DR. EUGEN OBERHUMMER.

Translation of an Extract from his Paper "Die Entwicklung der Erdkunde in Oesterreich seit der Mitte des 19. Jahrhunderts" (pp. 439-443). *Mitt. der K. K. Geogr. Gesellschaft in Wien. Band 51, No. 11 & 12, Wien 1908.*

Turning from the sphere of instruction and of the scientific cultivation of geography at the high schools, to consider those governmental and private organizations which perform the practical geographic work or preliminary work, our first thought turns to the most important and most indispensable basis of all geographic study, the map. While formerly, even as late as the 16th and 17th centuries, geographers and cosmographers themselves endeavoured to construct the picture of the globe and of the several countries, mostly from very scanty and unreliable data, and while this work still falls to their share in imperfectly explored regions, the rising demand for maps which shall contain not merely the general outlines but the most detailed and accurate topographic picture possible has caused the task of their preparation to pass from the hands of indi-

viduals into those of great governmental institutions. The eminently practical interest which the preparation of good topographic maps presented, first and foremost, for warfare and national defense was the reason why in most European countries, in the course of the 18th and 19th centuries, this work was taken in hand by the military administration. In Austria the decisive change took place under Maria Theresa and Joseph II, but the military surveys of that period have remained for the most part unpublished.*

It was only under Emperor Francis I that the publication of topographic maps of the various crown lands was undertaken on the basis of a new survey. When Emperor Francis Joseph I ascended the throne, that object had been attained only as regards the Alpine countries and Moravia; the representation of the other crown lands was at that time based as yet on very old maps, though of the highest merit, considering the time of their compilation, the surveys under Joseph II not having been published. Thus Bohemia was based on the map of Johann Christ. Müller (1720), Galicia on that of J. Liesganig (1780), Hungary on the maps of J. Chr. Müller (1709) and L. v. Lipszky (1806). It was only in 1849-1860 that the new crown land map of Bohemia appeared, and in 1865 the first sheets of Hungary were issued. Only a small part of that country had been thus completed when it was recognized that with the methods till then prevalent, and the slow process of reproduction by copper engraving, the extension of the map over all Hungary, Croatia and Galicia would require a disproportionate length of time, while on the other hand the crown land maps hitherto published (Salzburg 1810, Archduchy of Austria 1813, revised in 1843, etc.) were in part considerably antiquated.†

A thorough remedy could only be found in a complete new survey. After careful preparation (1869-1872), that vast work was finished for the entire monarchy in an unprecedentedly brief time (1873-1889), which, aside from a considerable increase in the working force, was only made possible by the new process of reproduction by heliogravure. The Imperial-Royal Military-Geographic Institute had thus performed an achievement which in rapidity and in unity of execution was unprecedented in the history of topographic

* E. Oberhummer: Oesterreich-Ungarn im Kartenbilde der Renaissance. *Mitt. der K. K. Geogr. Gesellsch.* 1907, pages 92-100.

† Data on the state of cartographic work in the first period of the reign of Emperor Francis Josef I are found in the reports by E. v. Sydow in *Pet. Mitt.* 1857, page 57 *et seq.*, and *Geogr. Jahrb.* I (1866), page 365 *et seq.*; IV (1872), page 526 *et seq.*; on the older maps, in the excellent monograph by Paldus, Joh. Christ. Müller. Wien 1907 (*Mitt. des K. u. K. Kriegsarchivs*, III Folge, Bd. V), exhaustively discussed by K. Peucker in the *Mitt. der K. K. Geogr. Gesellsch.* 1908, pages 149-160.

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map works, and has remained unequalled; the only work that can be, in some measure, compared with it is the excellent resurvey of the kingdom of Italy, which, with a smaller area, required a longer time. But when we foot up the total of what was done for the Monarchy in cartographic work during the reign of our Emperor, from the continuation of the old crown-land maps and the new detailed survey, together with the incident astronomic-geodetic preliminary work, to the revision of the detailed map and the most recent precision surveys, and when we compare this with the conditions before 1848, we find that an equally vast advance in national cartography during the reign of one monarch can hardly be met with anywhere, unless it be the mapping of the British Islands and the gigantic work of the Indian Atlas, during the equally long reign of Queen Victoria.

The activity of the Military-Geographic Institute, as everybody knows, was not confined to our monarchy. Aside from the extension of the old and new general maps over all central Europe, the Institute found a productive field of work first in Italy, the land of its birth,* and next in the Balkan peninsula, which touches our interests so closely. Hardly had the Italian surveys been terminated with the great topographic map of central Italy (1856), when the work in the southeast, whither the Crimean war attracted the attention of the whole world, began with the survey of Wallachia, completed in a surprisingly short time (1856-57). Later followed the reconnaissances in Albania and Macedonia, the general maps of the Balkan countries and of Greece, the detailed maps of Bosnia, Herzegovina and Montenegro, and the triangulation of Greece, works which, combined with the marine charts of the British Admiralty and the Russian war survey in the Balkans in 1878, as well as the Servian national survey, constitute the essential basis of the cartography of the Balkan peninsula and have been worked up after a uniform system in the new General Map.†

So far as the coasts of the Adriatic are concerned, there exists a

* Originating in the "Deposito de la guerra," established in Milan in 1800 on the model of the French "Dépôt de la guerre," the Institute was in 1839 transferred to Vienna, where it was united with the "Topographico-lithographic Bureau" of the Quartermaster-General's Staff, existing there since 1806, into one organization under the name of Imperial and Royal Military-Geographic Institute. See "Das K. u. K. Militärgeographische Institut zu Beginn des 20. Jahrhunderts." Vienna, 1901.

† Details may be found in V. v. Haardt, "Die Kartographie der Balkanhalbinsel im 19. Jahrhundert." Wien 1903. (*Mitt. des K. u. K. Militärgeogr. Institutes*, Bd. 21 und 22). *Idem*, "Die Tätigkeit des K. u. K. Militärgeogr. Institutes in den letzten 25 Jahren." Wien 1907. *Idem* in Umlauft's "Die Pflege der Erdkunde in Oesterreich 1848-1898." *Festschrift* der K. K. Geogr. Gesellsch., verfasst von Friedrich Umlauft. Wien 1898. XXIV and 318 pages. (*Mitt. der K. K. Geogr. Gesellsch.*, Band 41, Heft 12. Pages 83 *et seq.* and 93 *et seq.*

body of first-class material in the surveys of the Imperial Royal Navy (K. u. K. Kriegsmarine), beginning with 1866.* The nature of that organization causes its work to be extended beyond the home land much farther even than that of the army. The expedition of the "Novara" (1857-1859) and the two Austrian Polar expeditions (1872-1874 and 1882-1883) were initiated essentially with the cooperation of the Navy. The oceanographic investigation of the basin of the Eastern Mediterranean and of the Red Sea owes its most important foundation to the work of the "Pola" (1890-1898). To these are to be added the official reports on the voyages of individual warships, which contain valuable material especially for southern and eastern Asia, as well as private publications by officers of the Navy.†

It is not possible here to enter into the details of the work of the Marine Observatory at Pola. Similarly, as regards the geomagnetic survey of the monarchy (1889-1894), the progress in the measurement of a degree and the determination of gravitation, with which the name of Rovert von Sterneck is permanently connected. We have to be content with a brief mention and with a reference to the respective sections of the festal address by Umlauft‡ as well as to the recent official publications. Neither is it possible to discuss in detail the praiseworthy achievements of private and school cartography.§ But there is one branch of cartography activity which we can not pass in silence, since it is connected with one of the most important auxiliary sciences of geography, to wit, geology.

Just as the map forms the indispensable basis of all geographic knowledge, so our present conception of geography, our understanding of the forms of the earth's surface, presupposes essentially a knowledge of its geologic composition. In this respect, too, the period elapsed since the middle of the last century constitutes a period of complete reorganization of our knowledge. The main share of this, of course, belongs to the K. K. Geologische Reichsanstalt, which was called into life in the very first year of his Majesty's reign (1849). It is not possible to indicate, except in the most general outline, what that organization has accomplished for the geologic investigation of the entire monarchy, as well as for the

* v. Haardt in Umlauft, p. 86, 108 *et seq.* J. v. Luksch, *ibid.*, p. 52 *et seq.*

† V. v. Haardt, "Die Kriegsmarine im Dienste der geographischen Wissenschaft," in Umlauft, *loc. cit.*, pages 107-118. J. Luksch, "Ueber den Anteil der Monarchie an der Erweiterung der maritimen Erdkunde." *Ibid.*, pages 51-65.

‡ A. v. Kalmár, page 16 *et seq.* (measurement of a degree); K. Haas, page 21 *et seq.* (determination of gravitation); J. Liznar, page 29 *et seq.* (geomagnetism).

§ Some data on this subject may be found in Umlauft, page 89 *et seq.*

Austrian part of it, since the foundation of the Royal Hungarian National Institute (1869); nor will the time permit me to make individual mention of the great number of eminent investigators who were active in the service of the Institute. I will refer only to one of the accomplished directors of the Institute, the former President of our Society, Franz von Hauer. To him we owe the greatest advance in the clearing up of the Alpine deposits, which about the middle of the last century seemed as yet a hopeless riddle; together with the first attempt at a general geologic map of the entire monarchy (1867-1871), a work which has permanently laid down the main outlines of its geologic structure, and which, despite the wealth of recent detailed investigations, is still indispensable.*

The long-felt want of a geologic special map was recently met by the issue of such a map on the basis of the new topographic special map, the first sheets of which were published ten years ago on the occasion of his Majesty's golden jubilee as Emperor.† This enterprise, together with the one which the Polish Academy of Cracow has undertaken for Galicia, now places Austrian geology worthily alongside of similar work in other countries, especially Germany and Switzerland. During the past ten years the great work has steadily advanced, although the difficulties of accurate mapping are unusually great, in view of the extent of the national domain and the nature of the configuration, as well as of the geologic structure. (*Translation by Robert Stein.*)

* Hauer's activity is described in detail in the comprehensive obituary by E. Tietze, "Franz von Hauer." Wien 1900. (*Jahrb.* der K. K. Geolog. Reichsanstalt, Band 49.)

† F. v. Richthofen, "Die neue geologische Karte von Oesterreich." *Zeitschrift* der Gesellschaft für Erdkunde zu Berlin, 1898, pages 355-366.

THE SEVENTEENTH MEETING OF GERMAN GEOGRAPHERS.

BY

W. JOERG.

The XVIIth meeting of German Geographers was held in Lübeck on June 1, 2 and 3, 1909. The attendance was the largest since the XIIIth meeting in Breslau in 1901, 379 persons being present, of whom 285 were active members having the right to vote. The German and Austrian universities were very fully represented by the following incumbents of geographical chairs: Brückner

(Vienna), Drygalski (Munich), Fischer (Marburg), Friederichsen (Griefswald), Hahn (Königsberg), Hettner (Heidelberg), Krümmel (Kiel), Meinardus (Münster), Neumann (Freiburg), Partsch (Leipsig), Penck (Berlin), Philippson (Halle), Regel (Würzburg), Rein (Bonn), Sapper (Tübingen), Sieger (Graz), Supan (Breslau), Ule (Rostock), Wagner (Göttingen).

The principal topics were grouped under the following headings: Explorations, Oceanography, Physiography of Deserts and Geographic Teaching.

Three papers were presented on original explorations. Professor Sapper reported on an expedition to the Bismarck Archipelago which he undertook in the early part of 1908 in conjunction with Dr. Friederici, under the auspices of the German Colonial Office. New Hanover and New Mecklenburg were explored, as well as adverse weather conditions would permit, the latter island being crossed six times. The resulting complete knowledge of the topography of the interior has been epitomized on a large scale map of the islands, which was submitted to the meeting.

Dr. Karutz gave an account of the results so far achieved by the expedition organized by the Lübeck Museum of Ethnography to study the native tribe of the Mpangwe in the southern Cameroons and the adjoining part of the French Congo. Valuable deductions can already be made on the basis of the material available as to the racial elements which have entered into the formation of this composite tribe.

Dr. A. Tafel spoke of his trip to Tibet, which led him from the upper Han River to the bend of the Hoang Ho at Tung-Kuan-ting, and from there to the upper reaches of that river towards the Kukunor. His route was illustrated by a series of maps which were excellent examples of comprehensive exploratory mapping.

A paper that pre-eminently commanded the attention of the meeting was the one on "The Newer Theories of Ocean Currents," read by Professor Krümmel. After showing that the drift theory is no longer tenable, as it fails to explain satisfactorily the causes of ocean currents, he discussed in detail Zöppritz's claim with regard to the important part that friction takes in conveying motion to the lower layers of water. This he contrasted with Nansen's and Ekman's views on the influence of the earth's rotation on currents and their theories on the modification of the direction of water motion caused by this agency at greater depths. The lecturer's own opinion was to the effect that the factors involved in the origin of ocean currents were constituent rather than causal, and he made a strong plea for

the consideration of all factors in any attempt to explain the cause of ocean currents,—of the active factors as exemplified by wind, pressure, temperature, salinity, evaporation, as well as of the passive factors such as the continuity of water masses and the earth's rotation.

The only other paper on an oceanographic theme was the one Dr. Eckert read on the Development of German Admiralty Charts. In spite of the short existence of the German Hydrographic Office, it has published a considerable number of charts of the highest quality in scientific accuracy and artistic execution. These are gradually replacing foreign-made charts for navigation in German coastal waters, and, since 1901, when the first charts of foreign coasts were published, they have been used in foreign waters also. It is evident, however, that Germany cannot yet compete in number with the publications of the admiralty or corresponding institutions of Great Britain, with nearly 4,000 separate charts, of France with 3,000, of the United States with 2,600, or of Japan with 700. It may be interesting to note, in this connection, that Welcker, the chief cartographer of the German Admiralty from 1875 to 1888, received part of his training in the United States Hydrographic Office.

The greatest interest was evinced in the papers presented by Dr. Passarge and Professor Penck dealing with the physiography of deserts. The former reported on the results of his studies in Algeria on denudation in deserts, while the latter spoke of the problem of the genesis of deserts in general.

Dr. Passarge was of the opinion that Walther's views with regard to the factors leading to the formation of deserts had been too extensively generalized. His theories did not, at least, hold good for the North Algerian Steppes and the northern Sahara.

Professor Penck, too, referred to Walther's views. The latter had attempted to explain the genesis of deserts by means of definite processes. In this it is possible that he had overestimated the influence of wind. The problem should also be approached from the point of view of the genetic development of land forms. These considerations should not be restricted to the forms of arid regions; regions of a moister climate should also be studied, for many desert forms, so called, are typical of humid countries. Then it will appear that water erosion is a more important factor in the formation of deserts than has heretofore generally been thought. For arid climate does not preclude the possibility of precipitation; on the contrary, relatively rare though it may be, it usually is particularly vehement and therefore exerts a very great erosive power.

These two papers represent material advances towards the elucidation of this problem and in themselves make for that consideration of all factors which is necessary to explain the complex phenomena of nature.

The subject of Geographic Teaching led to a very animated discussion. At the previous meeting at Nuremberg in 1907, the Permanent Commission for the Teaching of Geography had been directed to prepare a detailed memorandum containing suggestions for adequate reforms in the teaching of geography in secondary schools. This memorandum, a book of 83 pages, had been sent to the members of the Lübeck meeting before its convention. It contained papers on the importance of geographic training, the aims and methods of geographic instruction, the qualifications and training of teachers of geography. The view expressed in the paper on the latter subject by Professor Neumann of Freiburg University did not seem to meet with general approval: he recommended a detailed study of higher mathematics, physics, chemistry, zoology, botany, mineralogy and geology as a necessary prerequisite to competent teaching of geography. The general opinion, however, was to the effect that this represented an over-emphasis of the natural science side of geography and ignored its unique mission in education as a connecting link between the natural and the humanistic sciences.

The essential features of these reform suggestions, as finally summarized in the following way by Professor Penck, met with the unanimous approval of the meeting and were recommended to the consideration of the proper authorities:

"The prospective teacher of geography must have studied the subject for a certain length of time. The minimum amount of time and work necessary to gain a thorough, scientific knowledge must be determined according to the inherent requirements of the subject and the average capacity of the student. No difference must be made in the training of candidates according to the various types of schools in which they are going to teach.

"Without wishing to limit the freedom of combining various subjects with geography the meeting recommends the study of geography in connection with the natural sciences, especially geology, or with physics and mathematics, or again with history. The purely geographic work should by all means be supplemented by geological lectures, exercises and excursions. But the Meeting leaves it to the department of geography at the various universities to draw up special plans of study.

"The meeting, therefore, emphatically renews its former demand for a strictly professional training of geography teachers and for the extension of instruction in geography to the upper classes in all types of secondary schools.

"The meeting does not expect a person who teaches geography to devote his time exclusively to this subject, but it does demand of him competent and thoroughly scientific instruction.

"The meeting believes the main objects of geographic teaching to be the following:

"1. The acquisition of clear topical conceptions of the conditions of the earth's surface.

"2. A familiarity with the fundamental laws of mathematical geography in so far as necessary for general culture.

"3. A knowledge of the physical and specially of the geological conditions of the earth's surface and an understanding of their mutual relations and causal connections.

"4. An understanding of the interaction of the physical properties of the earth's surface and man's activities.

"5. That measure of geographic knowledge which is necessary to understand the life of the present. Under this heading we include a knowledge of the distribution of peoples and races, of the political divisions of the earth, of the products of the separate countries and of the routes and *foci* of the world's commerce and transportation."

The program of the section on Geographic Teaching also included two papers on this subject, one by Dr. Schwarz, the principal of a "Realschule" in Lübeck, on "The Teaching of Mathematical Astronomy in the Lower and Middle Classes of Secondary Schools," and one by Dr. Oppel, who presented two new commercial wall maps of which he is the editor. The one illustrates the products, industries and commerce of Europe on the scale of 1:3,200,000, while the other deals with the same features in greater detail with regard to the German Empire on the scale of 1:800,000. Both maps are very clear, every arrangement which tends to produce illegibility, such as the superposition of symbols, being carefully avoided. If, in principle, the feasibility be recognized of presenting economic and commercial data on a map intended to be effective at a distance, these maps may well be considered to represent a very decided advance in their specific field.

The remaining papers dealt with miscellaneous subjects, except a group of three which treated of the physiography of the plain of the lower Elbe. Dr. Olbrich discussed the morphological problems of the Lüneburg Heath, Dr. Lehmann, those of the island of Rügen, while Dr. Behrmann spoke of the glacial valley troughs to the west of the lower Weser.

Professor Oberhummer had chosen "Medical Geography in its Relations to Anthropogeography" as his theme. By medical geography he understood that branch of geography which deals with the conditions of existence of man, as such, and of the different races. It involves, he explained, such questions as those of the influence of climate on man's physical state, of the vertical and horizontal limits of the distribution of mankind, of the possibility

of existence for various races in other than their own zone, as, for instance, of the white race in the tropics, of the black in temperate zones, and of the yellow race, with its seemingly unlimited capacity for accommodation. Furthermore, it includes the consideration of medicinal springs, not for their therapeutic interest, but because of their economic importance in furnishing the *nuclei* around which settlements have crystallized. The discussion of the distribution of diseases and their geographic control terminated this original paper.

A paper on balloon maps by Dr. Gasser bore witness to Germany's ever-increasing interest in aeronautics; and one on the Spelling of Geographic Names, by Professor Rein, made a stand against the acceptance of English spelling for foreign names, especially Chinese and Japanese, and told of Germany's effort to liberate itself from foreign influences.

In a business session of the meeting Professor Philippson offered a resolution, which was adopted by the majority of members present. It deplored the fact that the published results of scientific undertakings carried out under the auspices of the German Government are sold only at practically prohibitive prices and that they are not even furnished free or at an adequate discount to libraries and university seminars, thereby limiting their usefulness to a great extent. In view of this fact it was recommended that in each appropriation allowance be made for a sufficient amount to cover the cost of publication, so as to render possible the free distribution of copies to the public institutions of Germany and, as far as practicable, of foreign countries. In the discussion which preceded the adoption of this resolution attention was directed to the liberality of American and British government bureaus in the distribution of their scientific publications.

In connection with the meeting a geographic exhibit had been arranged that, as is customary, emphasized local conditions. A series of maps of Lübeck and the surrounding country from 1600 to the present illustrated the historical growth of the town. Further contributions to the geography of Lübeck were contained in the catalogue of the exhibit in an article on "The Cartography of Lübeck" by G. Häussler, and in three treatises on the Geology of Schleswig-Holstein by R. Struck, on Sailing Directions for Lübeck Bay by F. Schultze and on the Etymology of the name Lübeck by W. Ohnesorge. These three papers were united to form a very attractive memorial which was presented to the members. A pamphlet on the Geology of the City of Lübeck by Dr. P. Friedrich, together with a paper read at the opening session by Dr. Ohnesorge on the

Position and Development of Lübeck, rendered familiar the region in which the meeting was convening.

The geographic exhibit further contained objects relating to navigation, surveying and terrestrial magnetism, consisting of instruments, charts and books, the ethnological collections of the Lübeck Mpwangwe expedition, referred to above in connection with the paper on that subject, and a small but interesting exhibit illustrating the methods of teaching geography in secondary schools. Several map publishers had also sent samples of their wall maps, school geographies and atlases.

The meeting was followed by various excursions, most of which afforded an opportunity for the study of moraine topography. The main excursion, lasting three days, had eastern Schleswig-Holstein for its field, while three single day excursions included a visit to the region immediately to the south of Lübeck, a trip down the Trave by boat and the demonstration of the use of oceanographic instruments on board a surveying steamer.

The XVIIth meeting of German Geographers can, therefore, worthily rank with its predecessors as truly representative of the German geographic thought of the day. The next meeting would ordinarily take place two years hence, but, in order to avoid conflicting with the International Geographic Congress, it will be held in 1912 at Innsbruck.

GEOGRAPHICAL RECORD.

AMERICA.

THE SOCIETY'S EDUCATIONAL COLLECTION.—The wall maps, atlases, and textbooks, representative of many of the best appliances used for geographical education in Europe, which were collected last year by the American Geographical Society, are now on exhibition in the University summer schools of the middle West. The exhibition opened at the University of Wisconsin on April 15, University of Minnesota on June 4, and Ohio State University on June 21. The later exhibitions will open at the University of Chicago, July 15; Denison University, Granville, Ohio, Sept. 15; University of Cincinnati, Oct. 15; State Normal School of Michigan, Ypsilanti, Nov. 24; and the University of Michigan, Dec. 1. The University of California and Leland Stanford Junior University have secured the collection for dates not yet assigned, and when it goes to the Pacific Coast it will probably remain there for some time. Not a few teachers think that the collection will be especially helpful in the Normal Schools and it is expected that many of them will exhibit it. The material is loaned to any educational institution that desires it.

ALASKAN GLACIERS.—The National Geographic Society has sent out a party to spend July, August and September in the study of the glaciers of southeastern Alaska. The party is headed by Professors Ralph S. Tarr of Cornell and Lawrence Martin of the University of Wisconsin. It sailed from Seattle on June 24 and will go to Yakutat Bay, where Professor Tarr was engaged during the summers of 1905-6 in the service of the U. S. Geological Survey, Professor Martin being enabled, by a grant of money from the American Geographical Society, to share in the work of 1905 as special assistant in physiography. The explorers published the results of their studies of the glaciers and glaciation of Yakutat Bay in the *Bulletin* of this Society (Vol. XXXVIII, 1906, pp. 145-167).

One of the leading purposes of the present expedition is to investigate the changes that may have been brought about in the glaciers of that region by the earthquake of 1899. In August, 1905, the explorers walked over the smooth and practically uncrevassed surface of these glaciers, but in 1906 the smooth surfaces were replaced by a sea of crevasses over which travel was practically impossible. The only explanation that has been assigned to this change is that "during the earthquakes of September, 1899, vast quantities of snow, ice and stone were avalanched down upon the reservoirs of the glaciers, giving such a sudden addition to the glacier supply that a wave of advance was started which, sweeping rapidly down the glaciers, broke the rigid, stagnant mass into a maze of crevasses and sérac—a veritable glacier flood."

If the work in Yakutat Bay is finished in time, the party will go to Prince William Sound to study and map the larger glaciers of that region, notably those in the Port Wells Inlet. Mr. W. B. Lewis of the U. S. Geological Survey has gone with the expedition as topographer, and Mr. O. D. von Engeln, of Cornell, as photographer.

THE COAL FIELDS OF ALBERTA.—The Resource Map of Canada, recently published by the Interior Department, covers a large part of the Alberta province with a symbol indicating the vast extent of the Alberta coal fields. These fields, the most extensive in Canada, are described in a paper, "The Coal Fields of Alberta," by D. B. Dowling, published in *Economic Geology*, (No. 1, 1909). He divides them into three formations, the Kootanie, the Belly River and the Edmonton. The Kootanie measures, as far as now known to be exposed in Alberta (the Crow's Nest area is not included in the estimate), have an area of 288 square miles and an estimated coal content of 7,930,000,000 tons. This is mostly bituminous in character, but a small fraction, 400,000,000 tons, can be classed as anthracite. In the Belly River formation, the area over which a workable seam may be found can hardly be estimated, but as the formation is exposed over an area of about 25,000 square miles, one-fourth, or about 6,000 square miles, may be assumed as valuable. This, with four feet of coal, represents the very large amount of 26,000,000,000 tons of coal ranging from lignitic to bituminous. The area over which the Edmonton formation has been traced is enormous and the neighbourhood of Edmonton is almost a continuous coal field. Its area in the foothills is estimated at 2,000 square miles and on the prairies at about 10,800 square miles; and the estimate of total content, based upon exposures, is 71,000,000,000 tons ranging from lignite to lignitic coal. Settlers are rapidly pushing into these widespread areas and opening farms and ranches. The Canadian Northern and Grand Trunk Pacific railroads have now entered the Alberta coal fields, and the Canadian Pacific crosses the southern part of the area.

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AFRICA.

MOUNT CAMEROONS IN ERUPTION.—Reports reached Europe in May that in the last days of April and early in May Mount Cameroons was observed to be in eruption. Unmistakable signs of activity were seen at 7 P. M. on April 29, when the clouds above the northwest side of the mountain glowed with the light, volcanic bombs, hurled into the air, fell back upon the mountain and a flow of lava was distinctly observed. The eruptions continued for several days, and were quite violent at first, but feebler towards the last. Stone houses at Buea were badly damaged and the seat of government will probably be removed from that place. The plantations sustained no important loss.

Mount Cameroons thus disappears from the list of extinct volcanoes, confirming the investigations of Dr. Hassert, who explored the upper regions of the mountain from Oct. 22 to Dec. 2, 1907 (*Bull.*, 1908, p. 471). The view was long held that Cameroons, for centuries, had been an extinct volcano. But Hassert found, northeast of the highest point of the mountain, a crater ("Mount Robert Meyer Crater") that was still in the solfataric stage. He saw issuing from it a slender column of smoke and observed a very strong smell of sulphur. The natives had long told the whites that their fathers, a half century ago, had seen smoke issuing from the mountain, but this report was discredited.

AN AUTOMOBILE IN THE ANGLO-EGYPTIAN SUDAN.—A despatch to the London *Times* says that Captain Kelly has completed the first trip in an automobile from Khartum to Kassala, on the edge of Eritrea, and back. The distance between the two places is 255 miles. The journey out occupied four days and the return trip, two. The road across this partly desert region has been under construction for three years, wells being sunk and *khors* (water courses) filled.

THE RÉGIME OF THE UPPER NILE WATERS.—In his paper on "Fifty Years of Nile Exploration and some of its Results" (*Geog. Journ.*, Feb., 1909), Sir William Garstin told how the annual rise of the Nile is produced and how its supply is maintained throughout the year. In April and May nearly all the water passing Khartum is derived from Lake Albert, as the Bahr-el-Gebel feeder of the White Nile is almost dry and the discharges of the Blue Nile and the Sobat are very small. In June the Abyssinian rainfall begins to fill the Blue Nile and the Sobat discharge into the White Nile commences to swell. Both these rivers continue to rise and their flood is at maximum in August; at this time, also, the Atbara is in full flood, making a large addition to the volume of the Nile north of Khartum.

The following remarkable facts have not been understood: As the Sobat rises, its large flood holds back the smaller stream of the White Nile and the whole volume of water coming from the equatorial lakes is thus impounded in the valley above the Sobat junction. Then in August, the Blue Nile is in full flood with a volume several times as large as that brought down from the Sobat by the White Nile channel. The Blue Nile now begins to play exactly the part that the Sobat has enacted, though on a vastly larger scale. Its great flood entirely holds back the waters of the White Nile which are impounded in an immense reservoir that floods the White Nile valley for 200 miles. In September, usually, the Blue Nile begins to fall and as its discharge decreases the imprisoned waters of the White Nile are set free and begin to flow north. The quantity of the stored up water is so enormous that the discharge of the White Nile at

Khartum steadily increases till the end of the year. The waters of the more southern reservoir, formed when the Sobat was at flood, come on to swell the volume and during the early winter months the quantity of water that is passing Khartum is actually greater than that which Lake Albert is sending down the river. Thus these rivers automatically compensate one another so that, at the time when one system is passing on a large volume of water, the other is storing up its discharge, and, when the former begins to decrease in volume, the stored water takes its place and makes good the deficiency.

POLAR.

COAL FOR PEARY.—Captain Samuel W. Bartlett of Brigus, N. F., and Mr. Herbert L. Bridgman, Secretary of the Peary Arctic Club, purchased and equipped, in July, the schooner *Jeanie,* of Bay Roberts, N. F., for a voyage to Etah, Peary's base station in Greenland, near Smith Sound. She was expected to sail, under command of Captain Bartlett, from St. John's, N. F., with a load of coal to be deposited at Etah for Peary's exploring vessel *Roosevelt* when she comes south from her winter quarters on her homeward voyage. This event is probably contingent upon the success of Peary's effort to reach the North Pole last spring. If he failed to carry out his plan, early this year, he is expected to make another attempt next spring. Captain Bartlett, on his homeward voyage, expects to bring with him Mr. Harry Whitney, of New Haven, Conn., who went to the Smith Sound region on the *Erik,* last year, and remained during the winter for musk-ox shooting. The Dr. Frederick A. Cook Relief Committee of the Arctic and Explorers' Clubs, having ceased its efforts to raise money to buy a ship, turned over the funds collected to Bartlett and Bridgman and the *Jeanie* expedition will endeavour to bring Dr. Cook home. Calls northbound will be made at Godhavn and Upernavik and Cape York, and returning the course will be on the western side of Baffin's Bay, with calls at the whaling stations in Baffin Land and on Hudson Strait, with the possibility, however, that all plans may be changed by meeting the *Roosevelt,* in which case Commander Peary would assume authority over both ships.

The *Jeanie* will be the only vessel, as far as is known, from America to enter Melville Bay and Smith Sound this season; and only one whaler, *The Morning,* Captain Adams, has gone from Dundee, Scotland.

PHYSICAL GEOGRAPHY.

EFFECT OF ATMOSPHERIC PRESSURE UPON THE EARTH'S SURFACE.—"The Effect of Atmospheric Pressure upon the Earth's Surface" is the title of an interesting paper by F. Napier Denison, in the *Journal of the Royal Astronomical Society of Canada* for November-December, 1908. Mr. Denison is the observer of the Canadian Meteorological Service at Victoria, B. C., and since 1899 has been studying the records obtained on a Milne seismograph in relation to the disturbing effects of areas of low and high pressure, tides, rain and snowfall, temperature changes, etc. In an earlier paper, read before the Royal Meteorological Society (London) in June, 1901, the same writer gave a preliminary discussion of this subject. The results of the present study are, briefly, as follows:

At Victoria, at the southern end of Vancouver Island, the movements of the pendulums demonstrate a tilting of the earth's surface in the direction where the

pressure of the atmosphere is greatest. The pendulums often commence and continue swinging in a certain direction hours, and sometimes more than a day, before the barometers along the Pacific coast indicate the approach of great cyclonic or anticyclonic areas from the ocean. The seismograph thus acts as a barometer which is more sensitive than the ordinary mercurial barometer. The pendulum movements are greatest during the stormy months of winter and least throughout the summer, when the changes of pressure are small along the Pacific slope. To arrive at the true connection between pendulum movements and changes of air pressure, the latter must be studied with charts covering areas of from 1,000 to 2,000 miles in extent, otherwise local atmospheric conditions may appear to cause a tilting effect contrary to that indicated by the pendulums. The loading of the Pacific coast during the winter months with heavy rains on the lower land and great quantities of snow upon the great mountain ranges of the interior may account for a small proportion of the easterly tilting. The curves under discussion clearly demonstrate that pronounced westerly tiltings occur during the winter months, when vast areas of high pressure are to the westward of the station. A careful examination of the east-west Milne record shows that the diurnal movement is found to be well marked upon fine days and either absent, or nearly so, during overcast or rainy weather. The loading effect upon the coast resulting from tidal action is noticeable upon the records chiefly during the summer months, and only when slight differences of barometric pressure prevail; also only when extreme tides occur. During unsettled weather, when great differences of air pressure are taking place over the Pacific slope, the tidal effect upon the pendulum is completely masked by the greater deflecting force.

R. DEC. W.

PILOT CHART OF THE SOUTH ATLANTIC OCEAN.—The U. S. Hydrographic Office announced a year or more ago that there would soon be issued a "Pilot Chart of the South Atlantic Ocean," similar to the already well-known charts of the North Atlantic and North Pacific Oceans. The first number of this new chart is that for June, July and August, 1909. Its publication is to be welcomed both because of the special meteorological interest which attaches to the South Atlantic, and, further, because the increasing attention which is being paid to things South American will naturally also extend to the meteorological and climatic conditions which prevail along the coasts, and over the oceans crossed by steamers and sailing vessels going to and from South America. The general plan of this chart is similar to that of the North Atlantic and North Pacific charts. The information in red presents past or existing facts (derelicts and wrecks, icebergs and field ice, drifting buoys, ocean currents, magnetic variation, limiting line of ice region); the information in blue represents expected and average conditions of wind and weather (prevailing winds and calms), based on past averages, and recommended routes for steam and sail. There is a discussion of the passage of the Strait of Le Maire. Those who study this South Atlantic chart regularly, year after year, from now on, will be interested in seeing how the gradual accumulation of meteorological data for the "squares" south of latitude 45° and between longitudes 50° W. and 35° E. will result in filling up the blank space which now appears over this portion of the ocean on the first issue of the chart. The development of the North Atlantic Chart from its first crude and incomplete form, twenty-five years ago, has been very interesting to watch. R. DEC. W.

CHANGES OF CLIMATE IN TURKESTAN.—Dr. A. Woeikof, in the *Meteorologische Zeitschrift* (Vol. XXV, pp. 567-568), gives, briefly and emphatically, a few statements in connection with some recently expressed opinions that there is a progressive desiccation in Turkestan. He shows that during the past fifteen years lakes there are gradually and generally increasing in size, over a wide area. Woeikof concludes that there are very marked fluctuations in the rainfall and water levels in Turkestan, but whether periodic or irregular does not yet appear. If periodic, the period is longer than that of the Brückner cycle. There is absolutely no evidence of a steady progressive drying-up of Turkestan, in Woeikof's opinion. The evidence of a former greater extension of the rivers and lakes probably belongs to a period which corresponds to the last glacial epoch in Europe. General glaciers have disappeared from Europe; in Turkestan there has been complete desiccation of some lakes, while others have become smaller. Further, there have been climatic oscillations since then, but nothing shows that there is anywhere on the earth's surface a permanent, progressive (*i. e.*, lasting several thousands of years) change of rainfall, or of water levels. R. DEC. W.

GLACIATION OF THE UINTA AND WASATCH MOUNTAINS.—In Professional Paper No. 61 of the U. S. Geological Survey (1909), W. W. Atwood describes in detail the glacial phenomena of the Uinta and Wasatch ranges. During the period of maximum extension of the glaciers, the total area covered by ice exceeded 1,000 square miles and only lofty peaks and narrow, rugged divides rose above it. There were altogether 30 distinct glaciers, the longest 27½ miles in length, and some of the largest reached beyond the mountains into the lower country to the north and south. The larger glaciers were really systems of glaciers with one or more tributaries, and counting these tributaries there were 104 glaciers of over a mile in length. In the Wasatch mountains there were at least 50 glaciers exceeding a mile in length, seven of which reached the shore line of Lake Bonneville. Dr. Atwood finds convincing evidence of two glacial epochs separated by a long interglacial interval. The glacial phenomena of the two mountain ranges are described in detail and illustrated by photographs and maps.

Like other students of glacial phenomena in recent years, Dr. Atwood sees clearly the striking evidence of profound modification of the mountain topography by the glaciers. His view on this subject is indicated by the following quotations:

"While the ice responded to topography and in large measure was controlled by the physical features of the range, yet at the same time it was modifying the forms encountered, changing the shape of the great canyons, and building new forms * * *

"Before the first Pleistocene snows fell on the Uinta Mountains, the heads of the great canyons, it may be fairly assumed, were narrow V-shaped notches, most of which reached nearly to the crest line of the range. The first ice was formed in these narrow canyon heads, and the earliest movement must have been down canyon. As the ice at the heads of the canyons increased in thickness, there came to be a notable movement down the sides of the gorges, concentrating the ice in the canyons and causing further movement downstream. With the movement of the ice on the slopes in these miniature catchment basins loose *débris* was carried downward and the basins were both widened and lengthened. About the margin of these early ice fields, weathering and ice plucking were in progress,

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such work as is going on to-day at the base of the Bergschrund. In this way the catchment areas were increased in size and changed to cirque-like forms. * * Coincident with the widening of the basin there was a narrowing of the divides between the heads of the canyons and a narrowing of the main crest of the range. Some of the divides were so reduced in width that it is dangerous to try to walk along them. Others were surmounted and greatly reduced in height by the ice. The main crest line was sharpened, and the peaks were made more prominent.

"In the canyons the great change * * was the development of broad U-shaped troughs. The preglacial forms were obliterated. The canyons were widened and deepened. In this process many tributaries were left as hanging valleys, with their lower ends several hundred feet above the main stream. The canyon walls were smoothed off as far up as the ice rested. Preglacial erosion lines and the asperities common to the slopes of unglaciated canyons were rubbed off. In the bottom of the gorges, on the canyon walls, and in the basins, the glaciers built up new topographic forms. They added to the physical features of the range numerous morainic ridges and many square miles of hummocky or rolling drift topography."

In the report many specific instances of these phenomena are described and illustrated, thus making one more important contribution to the literature which is firmly establishing the efficiency of ice as an agent of profound erosion.

R. S. T.

A NEW ZEALAND VOLCANO.—A letter to the London *Times* says that the Ngauruhoe volcano, in the volcanic region of the North Island, New Zealand, was on March 8 in eruption after quiescence for a year. A quivering of the earth near the volcano was felt in the evening and loud noises were heard. These phenomena were followed by the ejection of a column of steam and later by larger quantities of steam and volcanic ash. The eruption was apparently caused by the blocking of the main vent which was cleared by an outburst of superheated steam. There was no lava flow. Ngauruhoe is a symmetrical cone, 7,515 feet high, snow-covered and one of the four peaks in the Taupo district that still show signs of activity.

VARIOUS.

A NEW GEOGRAPHICAL PUBLICATION.—The Society has received the first two numbers of the *Izviestia* (Bulletin) of the Archangel Society for the Study of Northern Russia. The initial numbers of the publication, which will appear semi-monthly, contain several papers on the geography and development of northern Russia whose titles will be printed in "Current Geographical Papers." Mr. V. Lengauer is the editor and Mr. A. S. Chidlowsky is President of the Society, whose aim will be to promote a more detailed exploration of all parts of North Russia and to encourage and record the commercial and other phases of its development.

GEOGRAPHICAL LITERATURE AND MAPS.

(INCLUDING ACCESSIONS TO THE LIBRARY.)

BOOK NOTICES.

Russia's New Era. Being Notes, Impressions and Experiences—Personal, Political, Commercial and Financial—of an extended Tour in the Empire of the Tsar. By R. J. Barrett. xi and 292 pp., Illustrations, and Appendixes. *The Financier and Bullionist*, Limited, London, 1908. Price, 6s.

"Russia's New Era" is an eye-opening volume on Russia, present and future, by a writer who has secured his information first-hand, and who is evidently very much in sympathy with the spirit of Russia's progress. The volume covers the whole field of industry and presents a more than glowing account of Russia's future, commercial and political. Some of the statements made are startling to one who thinks of Russia as a somewhat backward country with unworked possibilities. The account of the luxury of travel by the Trans-Siberian Railway, which is described as more comfortable than American railway travelling, seems almost beyond belief and at variance with the accounts generally given in English.

The chapter on Russian Trade Openings is one of the most interesting in the volume, as it shows the vast possibilities for British exporters in this great realm and bristles with practical suggestions as to the ways to secure trade. The emphasis of the indifference of the English merchants to the necessity of meeting local conditions, reminds one forcibly of the constantly recurring recommendations of our Consuls to American exporters that they pay some attention to the geographical conditions of the country with which they are dealing.

The chapters on Industry and Trade show with much detail the rapid development of Russia in all lines of industry in the last few years. These chapters, like those descriptive of the several sections of the empire, are full of supporting statistics which give a new view of Russia's power and economic strength.

The author is sure that the reign of the present Czar will even exceed in significance the famous era of Alexander the Great. The volume throughout is illuminating and helpful and is a valuable source of reference concerning a great and little understood country. Even though one can not perhaps always agree with the author's point of view, it is refreshing to have first-hand, valuable information concerning a country which, for the welfare of the world, ought to be better understood.

R. E. D.

From Cairo to the Cataract, By Blanche Mabury Carson. 330 pp., 48 Illustrations from Photographs, Map, and Index. L. C. Page & Co., Boston, 1909. Price, $2.50.

A vivacious account of the journey up the Nile to Assuan. The book is of special interest to those intending to make the trip and to others who may wish to hear something about the usual experiences of the tourist on this excursion.

It abounds with entertaining incidents and excellent photographs, and its pen pictures of the steamboat tour, the ruins, the desert and the natives are graphic and interesting, if not novel. There is also a brief sketch of such parts of Egyptian history as will make the Nile ruins mean more to the ordinary sightseer. The book is calculated to suggest many things to most tourists that will enhance their comfort and stimulate interest in what they see.

Kultur und Reich der Marotse. Eine historische Studie. Von Martin Richter. Achtes Heft, "Beiträge zur Kultur-und Universalgeschichte." xvi and 196 pp. and Sketch Map. R. Voigtländers Verlag, Leipzig, 1908. Price, M. 6.80.

The Marotse, one of the most important native groups of South Africa, occupy a large region along the upper Zambezi and its tributaries where the river sweeps in a wide bend from southeast to northeast. They have a long history, very imperfectly known. Modern travellers and missionaries from Livingstone to Gibbons have aroused interest in these subdivisions of a somewhat superor people. These studies, however, have been uneven in scientific merit and the results are not adequate for a complete account of their history and culture. Mr. Richter, however, has used the available material with painstaking and critical care, and his monograph is a valuable digest of our present knowledge of a large and strong people who seem, on the whole, to be more amenable to improving influences than many natives of inner Africa. The author devotes 63 pages to the history of the Marotse, which may dimly be traced for over two centuries, and gives a more or less critical estimate of the meager sources of information. He fills 132 pages with a careful and well-arranged account of the social elements, government, and intellectual status of the Marotse. His references to authorities are copious and the outcome of the study is to fortify the prevailing impression that there is a hopeful future for this people.

Samoa. Reiseschilderungen von Dr. Siegfried Genthe. Herausgegeben von Dr. Georg Wegener. xx and 306 pp., 1 Plate and Map. Allgemeiner Verein für Deutsche Literatur. Berlin, 1908. Price, M. 5.

Dr. Genthe, who was murdered by fanatical Moroccans (March, 1906), in Fez, was one of the most brilliant of contemporary German journalists. His first long journey was to Samoa in the service of the *Kölnischen Zeitung*. The letters he wrote to that journal made him famous. They were continued till his death and have since been reproduced, under the editorship of the well-known geographical writer, Dr. Georg Wegener, in 3 volumes: "Korea," "Marokko," and "Samoa."

Dr. Genthe's work deserved this distinction. He saw things vividly and accurately and had the gift of conveying to others a clear idea of what he saw. Thus, his well-trained faculty of observation, his intellectual honesty and his literary power made him a good geographical writer. He went to Samoa in 1899 and in the course of four months visited every part of the archipelago. In the 15 chapters of his book, he describes both the German and the United States parts of Samoa. He gives a graphic picture of the little group, depicts its natural beauties and characteristics, describes the Samoan people and their life and customs, many of which are destined rapidly to disappear owing to contact with the whites, and tells of the political conditions at the time of his visit during the unsettled days of the Samoan Commission. His book is among the best descriptions of the islands and their native inhabitants that has been written.

Revue de Géographie. Annuelle. Publiée sous la Direction de M. Ch. Vélain. Tome Second. 1908. 730 pp., many Illustrations and Maps. Librairie Ch. Delagrave, Paris, 1909. Price, Fr. 15, paper; Fr. 18, bound.

The second volume of this annual review which succeeded the well-known periodical of that name. The papers are of the highest geographical quality and give the results of conspicuous and recent research. Their titles will be recorded, later, in "Current Geographical Papers."

The Alpine Ski Club Annual, 1908. A Record of Winter Mountaineering. By Members of the Alpine Ski Club. 80 pp., and Illustrations. Horace Marshall & Son, London, 1908. Price, 2s.

The first issue of the annual publication of The Alpine Ski Club, of which Sir Martin Conway is President. Its 80 pages contain twelve articles on the great Scandinavian sport, besides a list of the latest mountaineering literature and the officers and rules of the club. A paper on the pronunciation of the word "ski" is not decisive, but the writer deplores the adoption, now seemingly irremediable, of the northern *shee*.

Beiträge zur Kenntnis des Karmels. Parts I. and II. Von Count Eberhard von Mülinen. *Zeitschrift des Deutschen Palästina-Vereins*, vol. xxx, 1907, pp. 117–207, vol. xxxi, 1908, pp. 1–258. 109 Illustrations, chiefly photographs taken by the Author, and two Maps.

The author of this monograph, a pupil of Albert Socin, spent some years in the Imperial German Diplomatic service at Beirut and Constantinople, and was appointed in 1890 gentleman-in-waiting to the German Empress. Having been obliged to resign the latter position on account of ill health, he returned to Syria in 1905 and made a prolonged stay in Haifa and, later, in the German sanatorium on Mount Carmel, where he employed his enforced leisure in a thorough and careful investigation of the surrounding country, the results of which are embodied in the work under notice. He was peculiarly fitted for the task both by his intimate knowledge of the Arabic language and the antiquities of the country, as well as by the experience he had gained of the manners and customs of the people in the course of his duties as attaché of the Imperial German Consulate at Beirut and in various journeys through Palestine and Syria.

The region described is remarkable in many ways. The greater portion of it lies within the confines of Mount Carmel itself, together with the adjacent strip of sea-shore; but the author includes in it a portion of the plain lying to the south of the mountain, since its soil is of the same ferruginous character as that of Mount Carmel and is sharply distinguished from the white, calcareous soil of the surrounding country, the difference in geological formation also affecting the nature of the vegetation, which is richer and more diversified in the Carmel region. The fauna, too, is peculiar, a number of wild animals, such as the leopard and the wolf, occurring here, which are not found elsewhere in Palestine; and the inhabitants present many characteristics, both racial and linguistical, quite distinct from those of the people in the adjacent districts. Moslems, both peasants and Bedouins, Druses, Persian Bâbîs, Catholics, Protestants, and Jews dwell on the slope of the mountain in almost perfect harmony, although occasional quarrels between Druses and Bedouins may occur. The government is carried on by the village chiefs under the supervision of the authorities at Haifa, but there are no resident Turkish officials in the mountain district.

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The oldest portion of the inhabitants are the Moslem peasants; that they are of very mixed race is scarcely to be wondered at when we recollect the number of successive waves of invasion that have passed over Palestine, each new wave driving the survivors of the former ones into the mountain fastnesses. Mount Carmel, furthermore, remained in the possession of the Crusaders for about 200 years. The author distinguishes two main types, the one tall, robust, and blonde, the other small, dark, and well proportioned; but similar types may be found side by side in other parts of Syria and Palestine. The Bedouins are at the present day of very little importance, although 200 years ago they ruled over the mountain. The rest of the population has settled on Mount Carmel within recent years. Since there are no government officials in the mountain district, the Turkish element is completely lacking.

But the chief interest centres around the numerous ruins, both pre-historic and mediæval, which have never been systematically examined until now. Few of the many travellers who visit Palestine ever think of turning aside from the beaten track to explore this mountain, so rich in natural beauties and historical associations, and the author has had ample opportunities for making new discoveries in this long-neglected region. He has visited and described the ruins of more than twenty Crusaders' castles which are not marked on any maps hitherto published; and the numerous pre-historic ruins, among which are several sanctuaries or "High Places," appear to have equally escaped the notice of former travellers.

The greater number of the castles built by the Crusaders are situated on the eastern slope of the mountain and form a continuous chain extending from a point nearly above Haifa far to the south. These fortresses commanded the road leading along the foot of Mount Carmel from the sea coast to the plain of Esdraelon, and at the same time protected the important castle of Athlith on the coast, the Castellum Peregrinorum (Château des Pélérins) of the chroniclers, which on the north was sheltered by the promontory of Carmel running down to the sea, and on the south was guarded by a line of smaller forts stretching along the sand dunes. Among the best preserved of these castles are the Chirbet Rushmia, near the German sanatorium (Part II, pp. 32-34) and el-Kerak in the southern part of the mountain (*ibid.*, p. 133); but the greater number appear to be completely ruined, the crosses sculptured on the building-stones affording in some cases the only means of identifying them. The castles on the seaboard are in a better state of preservation, and the author has been able to give some good photographs for those at et-Tîre (*ibid.*, pp. 60-61) and Athlith (*ibid.*, pp. 173-176).

Roman ruins are found at several points on the mountain (see pp. 80, 139, 208, etc.); the villa described on p. 80 is of especial interest on account of the richness of its decoration. We are inclined to regard the towers mentioned on p. 119, which the author refers to the stone age, as Roman watch- or signal-towers. The one represented in Fig. 50 closely resembles many of the Roman towers in the East Jordan country; and since the great Roman camp of el-Lejjûn was situated not far to the southeast of Mount Carmel, we should certainly expect to find watch-towers placed upon this important point of vantage.

Among the prehistoric ruins described in this work, one of the most interesting is that called Abû Zîghân, which is treated by the author in great detail on pp. 37-46, and with its niche (the photograph of which, Fig. 17, is placed upside down), its great cromlech, and its other buildings appears to have formed a sanctuary of some sort, although it cannot be considered as a genuine "High Place."

An example of the latter class is found at the extreme southern end of the mountain, at Nebi Tâtâ (p. 246), and, although actually used as a Moslem shrine, is rightly considered by the author to go back to a remote antiquity.

We cannot enter into all the interesting details with which this work abounds, but the foregoing selection will give a sufficient idea of the rich mass of material the author has collected.

The formal disposition of the work is hardly less admirable than its contents. The first part (*Allgemeiner Teil*) treats of the dialectical peculiarities of the region, its geographical boundaries and geological formation, its flora and fauna, and its inhabitants, the religious, political, and economic condition of the latter being described in great detail. There is hardly any subject connected with the life of the people that is not touched upon; and an appendix containing two short tales in Arabic with translations gives a specimen of the language spoken by them and affords an insight into their way of thinking.

The second part (*Spezieller Teil*) is devoted to the description of the mountain, its villages, and its ruins, and is arranged topographically, so that it may be used by future travellers as a guide-book to the region. This arrangement has the disadvantage of separating things that properly belong together, and it would, in our opinion, have been preferable if the descriptions of the various ruins and monuments had been placed in a chapter by themselves, with cross-references to the topographical part. At least there should have been an index enabling the reader to look up all passages relating to any particular class of monuments. The omission of head-lines to the pages, due probably to the mode of publication in a journal, is also a serious inconvenience, especially in the second part. We trust that the author will remedy these slight defects in the enlarged English edition of his work which he contemplates publishing, and which we trust will not be too long deferred. As the author composed his work while in the Holy Land, where he had but few books at his disposal, he was unable to give references to the works of his predecessors; these references, we trust, will also be added in the English edition.

In the meanwhile, no lover of Palestine capable of reading it in the original should fail to acquaint himself with the contents of this scholarly and carefully written work. As these lines are being written, we hear that the author has been appointed Consul-General of the German Empire at Damascus, a position which will afford him the most favourable opportunities for further investigations in the fields of Syrian ethnology and archæology. RUDOLPH E. BRÜNNOW.

Princeton, N. J., May, 1909.

The Niagara River. By Archer Butler Hulbert. xiii and 319 pp., Maps, Illustrations, and Index. G. P. Putnam's Sons, New York, 1908. Price, $3.50.

This is a splendidly printed and illustrated popular account of the Niagara River and vicinity, including its scenery, geological history and human associations. One chapter is entitled "A Century of Niagara Cranks." The area discussed extends from Buffalo to Toronto and the time covered is from the visit of Father Hennepin to that future generation perhaps when Mr. Tesla expects to signal Mars by wireless. The narrative, which is not intended to be an official report of Niagara's history, is marred at times by the inclusion of details of little interest to the general reader, as, for instance, when the list is given of the editors present at the formal taking over of the Niagara Reservation by Gov. Hill.

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The interesting chapter to geographers will naturally be that devoted to the geological history of the region. This chapter is a brief summary of the salient features of the geological history with several of the interesting sidelights omitted. There is no map available to make the story clear and no reference is made to the American geologists who have given Niagara the most careful study, with one exception. We also miss the classical illustrations which have proved so valuable in helping the layman interpret the story. This chapter, which might be one of the most interesting and fascinating in the book, is more than disappointing to one who would like to have available a brief authoritative account of this world-renowned area.

The historical chapters are more full and more interesting and include many reproductions of old maps which are pertinent and illuminating. Numerous quotations and references to authorities are given and these chapters make good reading.

On the whole, the volume is a good one, but it should be supplemented by several others on the part of those who would like a fairly complete story of Niagara. R. E. D.

The Geology of the Gold Fields of British Guiana. By J. B. Harrison. With Historical, Geographical and other Chapters by Frank Fowler and C. Wilgress Anderson. vii and 320 pp., 33 Illustrations, 10 Microphotographs, Appendixes, and Index. Dulau & Co., London, 1909. Price, 5s.

The book will be welcomed as an authoritative account in convenient compass of the geology and geography of British Guiana. Mr. Anderson supplies chapters on the physical features and the counties and towns of the colony; and the chapters on general geology and the geology of the goldfields and river basins abound with geographical information. The quartz veins, mineralized masses, and placer districts are treated in detail, and the results of many analyses of soils are described and tabulated. A chapter on hints to miners and prospectors, appendixes containing the mining laws, and a full Index conclude the volume. Thirteen mining companies are at work in these goldfields and the total amount of gold produced (1884-1907) is $36,200,000.

The Journal of an Expedition Across Venezuela and Colombia, 1906-1907. An Exploration of the Route of Bolivar's Celebrated March of 1819 and of the Battlefields of Boyacá and Carabobo. By Hiram Bingham. viii and 287 pp., 133 Illustrations, Map, and Index. Yale Publishing Association, New Haven and T. Fisher Unwin, London, 1909.

An account of field work upon an historical subject. The author was not able to find maps of Bolivar's battlefields and few trustworthy accounts of the scene of his greatest activity. With Hamilton Rice, he undertook an expedition which had for its objects the study of the country where Bolivar lived and fought, a visit to the scenes of his most important battles, Boyacá and Carabobo, and an exploration of the route of his most celebrated campaign. What Bolivar's difficulties were may be estimated from the graphic description on page 223:

> It was an undertaking that had few equals in military history. The long tedious march over the llanos in the wet season when torrential rains turn the plains into vast lakes and interminable swamps; the absence of any food except newly killed beef; the prevalence of malaria: the necessity of enduring terrible heat in the middle of the day and penetrating cold at night; of wading treacherous swamps and swimming flooded rivers; their clothes rotten and torn to shreds; the terrors of the Paramo; the

weak and enfeebled condition of the men; the loss of their animals; and all in the face of an enemy that outnumbered them. It is no wonder that the royalist army was demoralized by such an exhibition of courage. The moral effect of the march can hardly be overestimated. The battles of Pantano de Vargas and Boyacá were fought without any exhibition of strategy. They were won by men who first dismayed their adversaries by accomplishing an unheard-of feat and then fought with tenacious courage.

The book has all the advantages and defects of its kind, much repetition of the difficulties of the journey, a burdensome amount of irrelevant comment and description, intimate views of the life of the people, excellent photographs well reproduced, three important appendixes, the first two historical and the third on "Temperature and Weather" prepared by B. M. Varney of Cambridge, graphic descriptions of the llanos, the eastern valleys of Colombia, the trip down the Magdalena, and the seaports of northern Colombia. As the effort of a student of history to get at the country which was the scene of important historical events, the journey and the book are to be warmly commended, and might well serve as the first of a series of interpretations of South American history based upon that careful field work which gives the investigator a sure and sympathetic insight into his problem and the people who figure in it. I. B.

Every-day Japan. Written after Twenty-five Years' Residence and Work in the Country. By Arthur Lloyd, M.A. Introduction by Count Hayashi. xvi and 381 pp., 8 Plates in Colour and 96 Illustrations, Appendixes, and Index. Cassell & Co., Ltd., London and New York, 1909. Price, $4.

This book is to be commended to all who wish a better acquaintance with the characteristics, customs, and daily life of the Japanese. No person could have written it without living so many years among these people, so as to become almost completely identified with them. Mr. Lloyd's position in the higher educational work of Japan brought him into daily contact with the intellectual classes; but he knows all classes and has enjoyed superior opportunities for the observation of every phase of Japanese life. His work, therefore, differs fundamentally from the books of men and women who have seen Japan only through holiday-making eyes and whose writings are filled with hasty and superficial impressions.

Few of his pages fail to show the people and their country in some light that is new to many of us. To those who may never have heard that both the Emperor and Empress have some poetic gift and assiduously cultivate the muse, the translations from their poems will be very interesting. Here is what the Empress writes of the treasure of books:

> The jewel in a lady's coronet
> Gleams in her hair and sparkles in the gloom,
> And yet 'tis naught—a sparkle, not a light.
> The book whose page enlightens the dark mind
> Is the true treasure.

Some of the most illuminative chapters relate to the farmers, village life, the ways of the common people, social demarcations, Japanese education, money lenders and landlords, woman's work, marriage, and Japanese characteristics. We get a vivid idea of the small wages paid to artisans and labourers in the country districts where carpenters and stone masons receive about 20 cents a day, farm hands, 17 cents at seed time and harvest, and less at other times, and women working in the fields from 5 to 10 cents a day. It is only 39 years since the first newspaper in the vernacular was printed. Now there are over 1,600

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newspapers and periodicals, not including those printed in English. One paragraph about newspapers may be given here:

As for the contents of the papers, they are practically the same, *mutatis mutandis*, as those of an English newspaper. We get telegrams from all over the world, and know more of what is going on in Europe than the average Londoner knows of what is going on in Japan. We have leading articles on the topics of the day, some of them extremely shrewd and well written. Then there come local intelligence, reviews of books and literature, personal paragraphs (which, occasionally, in the lower-class papers, are extremely personal—even malicious), official notifications, and advertisments. Almost every newspaper has a *feuilleton* novel appearing daily in its columns; indeed it is to the daily press that Japan owes almost all of its modern novels.

There is a flavour of *naïveté* in the Tokyo practice of compelling every householder, at least twice a year, to wash and scour everything in his house under police supervision.

There are some things about their houses which naturally predispose them to the accumulation of dirt, and the educated Japanese takes the conclusions of science so seriously that bacilli and bacteria are no laughing matter with him.

Mr. Lloyd has seen a nation in process of development from almost mediæval feudalism to the commercial, scientific, and social life of the Twentieth century. He depicts that transformation and the causes that led up to it and gives chapters on the Japanese Army, Navy, and Civil Service. Count Hayashi, formerly Japanese Minister for Foreign Affairs, in his Introduction to the work, says: "It will be very helpful to those readers who are desirous of forming a sound and correct judgment on the problems that are arising and may arise in the Far East."

The fine photographs are new, but there is no map.

South American Sketches. By W. H. Hudson. 182 pp., Appendix. Duckworth & Co., London, 1909. Price, 1s.

A reissue of a book of South American stories by Mr. Hudson, published in 1902 under the title "El Ombú." The stories are well worthy the more durable form in which they now appear. If they were merely stories there would be no reason to mention them here. Few authors, however, have pictured wild life so vividly and accurately as Mr. Hudson has done for South America in his various writings on that continent. He has both the art of a story teller and the talent that catches and transfers to his page much of the atmosphere and colour of the life he depicts and of its geographic environment.

L'Afrique occidentale française. Par Georges François. ii and 508 pp., Map, Illustrations, and Index. Émile Larose, Paris, 1907.

When France was preparing for the Colonial Exposition at Marseilles, the General Governor of French West Africa placed in expert hands the preparation of a series of books on these colonies. A volume was devoted to each colony; and, as it was thought important also to give a collective idea of the vast Empire of France in West Africa, the above named volume was added to the list. The book shows why it was necessary to establish a general government over these colonies, describes its relations with the central power at Paris and with the colonies which it comprehends, and sketches its workings and the control and influence it exerts over all French or native activities. More than one-half of the book is given to the economic evolution in French West Africa as relates to public and private lands, labour, capital, and agricultural, industrial, and commercial development. This is the authoritative book on French West Africa.

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Il Congo. By E. Baccari. xxiv and 769 pp., Maps, Illustrations, Appendixes, and Index. "Rivista Marittima," Rome, 1908. Price, L. 20.

Captain Baccari of the Medical Service of the Italian Navy was sent in 1903 to the regions in the Belgian Congo west of Lakes Tanganyika and Kibu to study the availability of that region for Italian colonization. He collected a great deal of information about the large district, and this sumptuous volume contains the account of his travels from the sea to Central Africa and of his studies there. The book is beautifully illustrated and the maps by the Istituto Geografico de Agostini are excellent.

Im Schatten des Kongostaates. Von Leo Frobenius. ix and 468 pp., 8 Maps, 318 Illustrations, and 33 Tables. Georg Reimer, Berlin, 1907. Price, M. 14.

The Congo-Kassai country is classical ground of German exploration. Pogge and Wissmann first broke through the artificial barrier which the tribes of central Africa had set up against through traffic and trade in order to preserve their trading monopoly; and their successors, most of them also German, practically opened up the Kassai system. What is left to do for modern explorers is the more detailed scientific observation and study of the country and the natives, and for such purposes the author organized his expedition. His report is especially valuable in three respects: the careful topographical work of the expedition and the descriptions and diagrams of a great number of cataracts; the excellent descriptions of the various tribes which the expedition visited, and the frank and sensible remarks on colonial government in that part of Africa, both as it is and as it ought to be. Speaking of the natives, the author firmly believes in observing that barrier between the colored and the white races which makes the latter the master, and the former the servant, because the negro will obey only where he believes in absolute superiority, as he does with regard to his native chiefs, and the attempts of philanthropic civilizers who teach him the equality of all men inevitably destroys all the influence that the white man has over him. This influence must be exerted mainly in the direction of making him work, which is an especially hard task with regard to tribes in which the men are idle and the women do the work. Another great difficulty is the tendency of the negro to lying and deceit, which is especially found among the inhabitants of the forests. It seems as if the instinct of hiding and shooting their arrows from an ambush had entered also into their moral conceptions: whenever they are afraid they hide themselves, as it were, behind a lie. The tribes of the open prairies, on the other hand, fight with the spear, and while their whole gait and demeanour is more frank and outspoken, they are also more honest in their speech. Promises, however, given by any negro whatsoever must never be rated higher than as forms of polite speech used in order not to offend the interlocutor by a refusal; the idea of keeping his word is absolutely foreign to him, and it was one of the elementary lessons that the author taught his black servants that the white man kept his word, and he insists over and over again that there is no other way of making the negro truthful than by giving him the example of it in the conduct of the whites.

It is a great shame and pity that the methods generally used in the dealings of the white man with the negro are so little in accordance with the author's advice and practice, for his experiences go far toward proving how much better a man can get along with the natives by his method than by others. While refusing absolutely to consider or treat the natives as his equals, his attitude

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toward them is rather that of a father to his children who does not expect immature people to behave as mature ones would, but withal is confident of their ability to grow both intellectually and morally. It is on the very process of growth that he places the emphasis in his theories about the future of the negro; and he severely criticizes those attempts at his education which are, at best, nothing but the grafting of a foreign scion upon a stem which has not yet developed those qualities that are needed to make the scion produce good fruit. The only way actually to raise the negro to a higher level of civilization is to teach him that which is at the bottom of all higher civilization, namely, to make him work. The ethical value of regular work is the fundamental factor in the betterment of mankind. In order to lead the negro to that, the author very sensibly suggests to try to develop his home industries, especially pottery, into industries for the European market. The negro has the instinct of barter born in him. As soon as he sees that the products of his hands will help him to secure the alluring treasures of the white visitor he spares no effort to make for him as much of them as he possibly can.

By a wise exploitation of this interest, much headway might be gained in training him to regular habits of work, and the examples of such work, which are pictured in the book, leave no doubt but that there would be a market for these products. At the same time the colonial governments ought to send out, not missionaries whose message is often misunderstood, but travelling teachers, public school teachers with a genuine interest in the natives and a good general knowledge of them, who would settle among them in their villages as the author did, for shorter or longer periods at a time, and whose mission would resemble very much that of the American settlement worker, in so far as they ought to gain gradually and imperceptibly such an influence among their coloured neighbours as would gradually elevate them from their lower level to one more in accordance with Caucasian and Christian standards. Unfortunately, many of the present specimens of the white race among them are of a very different character.

The book is entertainingly written and very well illustrated; but there is a serious undertone to it which makes us look forward to the publication of the purely scientific part which is promised for a later date. Even this preliminary record, however, deserves the attention of everybody interested in primitive races from the scientific, humanitarian, or governmental point of view, as well as that of the intending explorer who will find in it much good advice and many valuable experiences that may come handy to anybody planning a similar expedition.

M. K. G.

The Nandi. Their Language and Folk-Lore. By A. C. Hollis. xi and 328 pp., many Illustrations and Map. Clarendon Press, Oxford, 1909. Price, $5.25.

In this work Mr. Hollis gives an account of the language of the Nandi people who live in a beautiful and fertile district of the British East African Protectorate to the northeast of Victoria Nyanza. The Nandi have been best known to students of Africa as a serious obstacle in the way of the pacification and development of that part of the Protectorate. For years they have terrorized traders on the way between the coast and Uganda. Later, they attacked the telegraph line and the Uganda R.R., which led to a punitive expedition, with the result that the tribe is now living on a reserve north of their former home, at peace with the whites, but still under police control. They are tilling the soil, tending their

herds, and learning that warfare and raiding are not the most important business of life.

Mr. Hollis has given to this study the same competent and tireless attention that made him known when his "The Masai, their Language and Folk-Lore," was published (Oxford, 1905). His new investigations have been in progress much of the time for about five years, and though his book does not claim to be exhaustive, it is a valuable contribution to the ethnography of east Africa. His work makes the Nandi offshoot of the Nilotic stock, hitherto almost unknown, one of the best-known tribes of tropical Africa.

Sir Charles Eliot, formerly Governor of the East African Protectorate, has supplied a long introduction, in which he treats with some minuteness the linguistic and other affinities of the East African section of the Nilotes—the Masai, Turkana, Nandi, and Suk. In part I the author gives 97 pages to the history of the tribe and a description of its social divisions, mode of subsistence, apparel, weapons, industries, religious belief, government and customs. The whole country acknowledges the overlordship of the chief medicine man. The incumbent of that office, during the recent troubles with the British authorities, was killed. Nandi folk-tales, proverbs and enigimas, fill 33 pages, and many of them do not lack acuteness and humour. Part II treats in 79 pages of the Nandi grammar. We learn that in its general construction the Nandi language resembles Masai. The inflections of the noun only distinguish the singular and plural. There are no cases and very few prepositions. The article and the relative pronoun are important and the verb is well developed, not only indicates person and time, but can assume forms which express such ideas as the direction or object of an action.

The grammar is followed by an English-Nandi vocabulary (81 pp.), and the volume concludes with a list of Nandi trees, grasses, etc., the meanings of the clan names and a very full index. There are many half-tones and drawings of the people, their country, habitations, implements, etc., and a good map in colours shows the Nandi country and that of allied tribes and the reserves to which these peoples are now confined.

The Spell of Italy. By Caroline Atwater Mason. x and 393 pp., many Illustrations, Index, and Map. L. C. Page & Company, Boston, 1909.

The enthusiasm of Mrs. Mason's Italian sympathies has helped her to write a very charming book, such as will inspire in its readers larger interest in Italy. It is quite different from most travel books. There is a little avowed fiction in it, bright writing and pleasant humour in plenty, but the book has a serious purpose, not distinctly enunciated, but evident everywhere. It is to the uninitiated that the work seems to be addressed. What is the spell of Italy that has mastered the imagination of great poets and prose writers of many lands and, in proper degree, has influenced a host of smaller minds?

The whole book is an answer to this comprehensive question. It tells of the history, art, architecture, ruins, the marvel and charm of the natural setting of all these works of man and time from pagan days to the present, that have profoundly influenced the thought and sentiment of those, temperamentally fitted to be deeply moved by the dynamic spell of Italy. The book sets forth these things without any tinge of obtrusive or pedantic effort, for they come easily and naturally among the descriptions and conversations. A chapter on ways and means will be very helpful to those who wish to travel economically and the sketches of some great authors who have been inspired by contact with Italian art and

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nature are especially good. The half-tone illustrations are unhackneyed, and the sketch map may be a sufficient cartographic guide, poor as it is.

Madrid. An Historical Description and Handbook of the Spanish Capital. By Albert F. Calvert. xxvii and 169 pp., 453 Illustrations outside the Text. John Lane Company, New York, and John Lane, London. Price, $1.25 net; postage 10c.

Mr. Calvert is doing much to familiarize English readers with the most celebrated cities and districts of Spain and its immortal painters and writers in "The Spanish Series" of monographs written or edited by him. Seventeen of these books have appeared and seven others are in preparation. The latest is this historical and descriptive account of Madrid, which, as the capital of Spain, the centre of Court affairs, and the repository of world-famous art collections, holds the most prominent place among cities of the Spanish world. Mr. Calvert gives a most readable account of the history of the city, its Court and society, the art of Madrid, its literature and drama, the royal armory, with its collection of arms and armour, and the life of the *café*, one of the most popular resorts throughout Spain; and last, but not least, the sport of bull fighting, to which many pages are given. The author says that bull fighting, "since the days of the Moors, has endured as the chief recreation of all classes of the population. There is in no other country, any sport that can be compared with it in importance and in the sway of its fascination upon the public."

A remarkable feature of the book is the 453 full-page plates, filling more than half the volume, most of them being photographic reproductions of the churches, the architectural splendours, paintings, and other art treasures, to say nothing of a series of 42 pictures illustrating bull fighting. The volume gives a vivid impression of the historical and political side of Madrid, but it is strange that the business aspect of the modern city should have been wholly neglected. Barcelona, to be sure, has been called "the life of Spain" in the commercial sense, but, for all that, Madrid is not merely a fashionable, pleasure seeking, and cultured centre.

Landeskunde von Skandinavien. (Schweden, Norwegen und Dänemark.) Von Heinrich Kerp. 138 pp., 11 Illustrations, 1 Map, Bibliography and Index. G. P. Göschen, Leipzig, 1904. Price, 80 pf.

The volume is divided into three parts, each with four sections. Part 1 is a geographical survey of Scandinavia under which are considered (*a*) its position, boundaries, area, and horizontal and perpendicular articulation; (*b*) geology and physiography; (*c*) climatic and botanical zones; (*d*) distribution of natural and cultural regions as follows: Part 2 (*a*) the Norwegian coast; (*b*) the Norwegian mountain systems; (*c*) the Swedish lowlands; (*d*) the Danish islands and Jutland. Each of these natural and cultural regions is treated in relation to its landscape features, the origin of its surface forms, and its cultural aspects. Part 3 is an economic and political study of the three kingdoms. An index, a bibliography, and a good map complete this condensed but excellent work. The bibliography errs, as so many German book lists do, in not including a sufficient number of excellent works in other languages than German.

Aus Deutschlands Urgeschichte. Von G. Schwantes. iv and 183 pp., many Illustrations, and Index. Quelle & Meyer, Leipzig, 1909 (?). Price, M. 1.80.

The purpose of the author is to interest the youth and general public of Germany in the ancient history of their country, as revealed in finds of human

handiwork. He expresses the hope that the book may stimulate greater interest in museum collections, and sharpen the eyes of the young when they are in fields where other finds await discovery. After treating in the first 80 pages the paleolithic and neolithic periods, Mr. Schwantes shows how comparative philology supplemented the labours of those scientific men who have sought in the ground for remains that throw some light, at least, on early history. He gives examples of similar words expressing the same idea in languages of Asia and Europe, and the inferences drawn from these similarities. The second half of the book is given to the Bronze age and later periods before and a little after the dawn of the Christian era, including the Roman occupancy of Germany. The illustrations are chiefly photographs or drawings of finds and are briefly described in the text. The book is calculated to interest young readers in this study.

Die Russische Polarfahrt der "Sarja" 1900-1902. Aus den hinterlassenen Tagebüchern von Baron Eduard von Toll. Herausgegeben von Baronin Emmy von Toll. iv and 635 pp., 48 Illustrations, 4 Tables, and Index. Georg Reimer, Berlin, 1909. Price M. 14.

The book contains the diary of the lamented polar explorer published by his widow after all hope of his return had been abandoned. Its records, together with those found by the rescue expedition on Bennett Land as the last message from the unfortunate author, add many valuable data to our knowledge of the countries along the north coast of Asia in general, and more especially of the Taimyr Peninsula and the archipelago of the New Siberian Islands. Speaking of that enormous peninsula which extends through 5° of latitude and 35° of longitude, an area equal to that of France and Spain combined, the author suggests five divisions which, from West to East, he calls Minin Land between the rivers Yenisei and Piasina, Middendorf Land between Piasina and Taimyr, Tcheljuskin Peninsula the part which projects farthest north, east of that, the Laptev Peninsula, projecting farthest east, and after that Prontchishtchev Land down to the banks of the Chatanga River, thus basing the nomenclature upon the names of those who discovered or explored the respective regions.

The most surprising fact about this large country is that it is almost entirely uninhabited, in spite of a comparatively rich fauna that would perfectly suffice, during the summer, to support a migratory population similar to other districts in those latitudes. The author finds an explanation of this anomaly in the location of the peninsula away from the large rivers of Siberia which carry driftwood, whereas the rivers of the peninsula, rising beyond or very near the northern tree line, are devoid of it; and in the direction of the prevailing winds and currents along the coast which prevent the collection of drift, that might be carried there from the mouths of the large rivers, along its shores. Geologically the peninsula was found to include three systems of mountains, one each of mezozoic, paleozoic, and archæan age. They are all strongly dislocated, worn down, and generally lowered by the sinking of the land, which recently, however, has given place to another uplift, as evidenced by terraces with postpliocene mollusks in the Minin and Middendorf Bays. Glacial scratches, boulders, and moraine deposits prove an extension of the glacial period over the western half of the peninsula.

During the second winter, spent on the island of Kotelnoi, proof was found for a geological relationship of the New Siberian Islands with the Werchojansk Mts. and the mountains west of the Lena River. The whole archipelago forms part of an immense fault of which the plateau of Kotelnoi represents the oldest terrace, with the same respective order of rocks on the main land to the south, as on the

islands to the north, of it. The pronounced increase, from south to north, of the intensity of the geological disturbances on the continent and the archipelago, along characteristic tectonic lines, seems to offer an explanation of Nansen's "deeps" in the polar sea, as the location of the continental terraces observed by Nansen corresponds to the direction and type of the dislocations found by Baron Toll, and their boundaries intersect each other at the same angles as do the tectonic lines of the New Siberian Islands.

The hypothesis is, therefore, offered that the origin of the Arctic Ocean dates from the tectonic disturbances at the end of the Tertiary which created the conditions for a glaciation of the polar regions by raising barriers which cut off the warm ocean currents from the South. The types of glaciation in northeastern Asia, owing to the dryness of the climate, differ from those of northern Europe, especially in the formation of *névé* which is often transformed into regular fossil ice strata occupying a definite geological position in the series of postpliocene sediments. They are not, however, identical with the mammoth beds, as the mammoth must have died out at the beginning of the period of their formation. As the probable cause of the extinction of the mammoth, Baron Toll seems inclined to consider, not so much the change of climate, as the arrival in those regions of other animals, possibly insects which, as the tse-tse fly in Africa with regard to cattle, might have proved disastrous to this one species, while others, like the reindeer, which were immune to it, were able to adapt themselves to the new climatic conditions.

That the last stage in the geological history of this region must have been a transgression of the ocean from the northeast has been proven by Baron Toll's discovery, on Bennett Land, of a post-tertiary fauna analogous to that of the New Siberian Islands. This archipelago, after having lost its permanent ice cover in the geological present, is now in a process of growth by the accumulation of sand bars in the sounds between the islands which will eventually re-establish the former connection of the islands with the mainland which Baron Toll's collections from Bennett Island have so fully proven.

It is a loss to science that so courageous and scholarly an explorer should not have been spared to work up the results of his observations. Nobody who has read the book will be able to lay it aside without regretting his untimely death.

M. K. G.

Das Reich der Wolken. Von Carl Kassner. (Wissenschaft und Bildung Series.) Pp. 156, Figs. and 6 Charts. Quelle und Meyer, Leipzig, 1909. Price, M. 1, linen, M. 1.60.

The title of Professor Kassner's new book naturally suggests Ley's "Cloudland" of fifteen years ago, but "Das Reich der Wolken" covers a much wider range of subjects than the former. In fact, we have in this attractive little volume as complete a discussion of what the Germans so well call "der Kreislauf des Wassers," as most teachers and students of Meteorology are likely to need. The author has read widely. He has arranged his material logically. He has written clearly and concisely. The book is thoroughly interesting, and not at all a mere dry compilation of all that is now known regarding the moisture of the atmosphere. Such a volume has been much needed. So rapid has been the recent advance in our knowledge of this branch of Meteorology that it has been difficult, even for a conscientious teacher, anxious to keep his instruction "up to date," to read the numerous publications which deal with the subject. Professor Kassner's little book is, therefore, sure of a warm welcome. It in no way inter-

feres with the absolutely indispensable quality of Hann's *Lehrbuch*. It is simply smaller, easier to handle, and less formidable, and therefore to be commended particularly to those who do not wish to make too serious a study of Meteorology as a whole, and are especially interested in clouds and precipitation.

The successive chapters take up evaporation, water vapor and humidity; condensation; fog; clouds; cloudiness and sunshine; rain; snow; hail; measurement of rainfall; rainfall data and their treatment; diurnal, annual and secular periods in precipitation; the causes of the distribution of rainfall over the earth's surface and the geographical distribution of this rainfall. The text is enlivened, at frequent intervals, by the introduction of interesting illustrations, and by references to the human relations of the subjects under discussion. Professor Kassner's style is admirably adapted for scientific writing, and he has made much clearer than many authors whom we have previously read several matters which almost always give trouble to students. Although the title emphasizes clouds, our author finds space to give excellent brief statements regarding forests and rainfall and changes of climate. He has made very clear the somewhat confusing subject of the three different kinds of snow-line. He has included (for the first time, we believe, in a meteorological text-book) an explanation of the curious forms of melting snow known as "nieve penitente," familiar to those who have visited the Chilean Cordillera. The modern trigonometric methods of cloud measurements are described and illustrated. An unusual photograph, that of the "Foehnmauer," is reproduced in Fig. 3, and another interesting one (Fig. 36) is that of the "snow-garlands" which the author recently described elsewhere.

Professor Kassner's book meets a need which we feel sure has been felt by many persons interested, professionally or otherwise, in Meteorology. The editor of the series in which "Das Reich der Wolken" appears was fortunate in securing an author who, in his "Das Wetter" and now in the present volume, has added two useful works to the meteorologist's library. R. DEC. W.

Die Vegetation der Erde. Sammlung Pflanzengeographischer Monographien. Herausgegeben von A. Engler und O. Drude. VII. Die Pflanzenwelt von West-Australien südliche des Wendekreises. Von Dr. L. Diels. xii and 413 pp., 1 Map, 82 Figures in the Text, 34 Tables and Index. VIII. Grundzüge der Pflanzenverbreitung in Chile. Von Dr. Karl Reiche. xiv and 374 pp., 2 Maps, 55 Figures in Text, 33 Tables, and Index. Wilhelm Engelmann, Leipzig, 1906 and 1907 Price, M. 36 and M. 30.

This notable series of monographs on plant geography is describing the vegetation of the earth under widely differing conditions, and the series, it is expected, will cover all the varied aspects of the botanical kingdom. Dr. Diels introduces Vol. VII with a general discussion of the various conditions of plant life in Australia and of the Antarctic, Melanesian, and Australian elements that enter into the flora of the southern continent. The Antarctic element is least important and is confined to the southeastern corner of the continent. The author's field of investigation was that part of Western Australia south of the Tropic of Capricorn. He treats (1) the history of the botanical exploration of the region; (2) its geographical and climatic conditions; (3) the vegetation of the Southwest province, 171 pages; (4) the vegetation of the Erenæa province, 51 pages; and (5) the floral characteristics, elements and types in the region studied and their relations to the flora of other parts of the continent.

Dr. Reiche has been a resident of Chile for many years, and volume VIII takes the reader over the wide field of his botanical studies. Over 100 pages are

given to a general description of vegetation in various parts of Chile, which, for purposes of botanical treatment, he divides into North (18°-30° 30′), Middle (30° 30′-36°), and South (36°-55°), and in each of these three divisions he distinguishes the coast and the interior lands with smaller areal classifications. In the later chapters he considers the genesis and life history of Chilean plants and presents a large number of facts as to the changes in the flora of the country in historic times. The eight Monographs now before the public are contributions of the greatest value to the orderly and scientific study of the regional distribution of vegetation.

Kartenkunde geschichtlich dargestellt von Hofrat C. Gelcich, Prof. F. Sauter und Dr. Paul Dinse. Dritte Auflage. Revidiert und erweitert von Dr. M. Groll. 177 pp., 71 Illustrations, and Index. G. J. Göschen, Leipzig, 1909. Price, 80 pf.

A condensed but excellent discussion of the cartographic art. Its progress is shown in Part 1 by the historical arrangement of the material. The earlier and later methods of place determination are described and the leading map projections of earlier and later times are shown with diagrams and mathematical discussion. Part 2 deals with modern map making, the development of methods for depicting the relief features of the earth by contours, shading and colours, and the symbolism by which a great variety of information is expressed on a map. A list of the most important books on Cartography (in German and French) is provided.

Illustrierter Führer durch Dalmatien (nebst Abbazia und Lussin). Längs der Küste von Albanien bis Korfu und nach den Ionischen Inseln. xvi and 244 pp., 8 Tables, 100 Illustrations, 19 Maps and Plans, and Index. Eighth Edition. A. Hartleben's Verlag, Vienna and Leipzig 1909. Price, M. 3.60.

An authoritative handbook on the regions of which it treats. They are coming, more and more, within the range of tourist travel. The letterpress, prepared with great care, is complete in its historical and geographical treatment and gives all the information required. The coloured maps and plans are produced in the best style of the map house of G. Freytag & Berndt. There are few good books on these eastern coast lands of the Adriatic, and this admirable volume should be in every public library.

Die Weltwirtschaft. Ein Jahr-und Lesebuch. Unter Mitwirkung zahlreicher Fachleute herausgegeben von Dr. Ernst von Halle. (*a*) 1 Jahrgang, 1906: Three Parts. I Teil. Internationale Übersichten, viii and 366 pp.; II Teil, Deutschland, vi & 253 pp.; III Teil. Das Ausland, vi and 281 pp. (*b*) II Jahrgang, 1907: 1 Teil, Internationale Übersichten, vi & 368 pp.; II Teil, Deutschland, viii & 284 pp.; III Teil, Das Ausland, vi & 288 pp. B. G. Teubner, Leipzig, 1906, 1907.

The two first volumes of an annual publication of great value to geographers, economists, and statisticians. Each topic is treated by a specialist and the Annual is calculated to keep those who read it carefully, well acquainted with the progress and activities of the more important phases of the world's business. Among the 46 subjects discussed in the volume for 1907, for example, are: Part I, The World's Agricultural Production, Banking Conditions, Insurance, Commerce and Communications, Industrial Technique; Part II, The Economic and Industrial Conditions of Germany in ten separate papers; Part III, Seventeen papers on the

economic and industrial conditions in the rest of the world, separate chapters being given to all leading countries. More detailed information in the tables as to the leading *loci* of great industries would make it easier to study the geographical distribution of these industries and the reasons for it. The work, however, contains an enormous amount of material for economic geographers. Each of the three parts has its own index and would make a good-sized volume by itself.

Ægypten. Unter-und Oberägypten, Obernubien und Sudan. Fünfte Auflage. (Meyers Reisebücher.) xiv. and 437 pp., 11 Maps, 31 Plans and Sketches, many Illustrations, and Index. Bibliographisches Institut, Leipzig and Vienna, 1909.

This guide book has from its first edition been counted among the best handbooks of Egypt. It is especially adapted to help those who have had little time for preliminary study before they start on the Nile tour. Every part of Egypt and of the Anglo-Egyptian Sudan now attainable by tourists is described in Meyer with all the special and general information the tourist requires. In few parts of the world is the ordinary traveller more in need of historical guidance and explanatory descriptions than when he is face to face with the ancient art and monuments of Egypt; and no pocket manual more fully supplies the need than this handbook.

Leitfaden der Handelsgeographie (Wirtschafts und Verkehrsgeographie) mit besonderer Berücksichtigung Deutschlands. Von Prof. Dr. Max Eckert. 300 pp., 53 Maps, 213 Diagrams, and Index. Second Edition. G. J. Göschen, Leipzig, 1908. Price, M. 3.60.

In the second edition Dr. Eckert has brought the statistical tables down to date, introduced a large number of new figures and diagrams, used for the world maps his own equal area projection, rewritten the sections on the German colonies, and considerably revised the other text. His maps and diagrams are admirable in educational quality. They are small, black and white illustrations, but, on the whole, there is probably no more helpful set of figures illustrating any text-book of commercial geography. The letterpress is packed with pertinent facts, but most American teachers would agree that trade conditions are not strongly enough presented from the viewpoint of their causes and effects.

Staatssekretär Dernburg in Britisch-und Deutsch-Süd-Afrika. Von Dr. Oskar Bongard. Second Edition. vi and 149 pp., 32 Illustrations and Appendixes. Wilhelm Süsserott, Berlin. Price, M. 1.50.

Dr. Bongard was also the historian of the first African journey of the Colonial Secretary which he described in his book "Die Studienreise des Staatssekretärs Dernburg nach Deutsch-Ost-Afrika." Mr. Dernburg made these journeys for the purpose of studying colonial prospects and affairs on the ground; and the great interest taken by the German public in colonial affairs is shown by the large sale of Dr. Bongard's two books. His account of the last journey is given in the form of letters that were originally printed in a leading German newspaper. Dernburg visited British South Africa for the purpose of picking up any ideas in the various colonies that might be applied with advantage in German Southwest Africa. The author regards the results of this excursion into British territory as well worth while, and he sketches, with the pen of a brilliant writer, many things that were seen and learned there. After visiting the British colonies, the party travelled overland to the German colony, and those parts of it that were visited are carefully described in their various aspects. The special merit

of the book is that its author is a student of new lands who, as a member of the party of a high official, had unusual facilities for learning the condition of things and the progress, hopes and prospects of the young German Colony.

The book confirms the view, which has been crystallizing for some time, that this colony, long thought to be of little value, provides a future for the white race that no other of the German colonies in Africa will ever afford. He says the country offers opportunities for the development of stock-raising, but that general farming will not thrive without large capital to establish irrigation plants. There is good grazing in 500,000 square kilometers, the areas of pasture lands nearly equalling Germany in size. It is estimated that 1,000,000 beef cattle and several millions of mutton sheep could annually be exported. Stock-raising is in its infancy, but is increasing every year. In the past year, for example, the number of cattle on the ranches of the whites grew from 53,000 to 72,000; mutton breeds of sheep from 98,000 to 190,000; wool sheep from 3,500 to 10,500; common goats from 100,000 to 153,000; Angora goats from 3,700 to 4,500; and horses from 2,100 to 4,500. The prospects of mining are also very bright, and a chapter is given to the recent discovery of diamonds in the sands spreading inland from Lüderitz Bay. One of the excellent pictures shows the Colonial Secretary grubbing around in the sand where he actually discovered some small gems.

Brief Mention.

Glimpses of the Alaska-Yukon-Pacific Exposition, Seattle, Wash., and the Great Northwest. Laird & Lee, Chicago, 1909. A large number of photographic half-tones with short descriptive letterpress illustrating the growth and resources of western America.

Fairfield, Ancient and Modern. By Frank S. Child. 75 pp. and Illustrations. Fairfield Historical Society, 1909. Price, 50c. paper. The little work was prepared in commemoration of the 270th anniversary of the settlement of this famous Connecticut town. It was here, on the north shore of Long Island Sound that the Pequot war ended. The town was burned by Gen. Tryon in the Revolutionary War.

Svenska Turist-Föreningens Årsskrift, 1909. 495 pp. and 299 Illustrations. Wahlström & Widstrand, Stockholm, 1909. Price, 5 öre. A superbly illustrated Annual which is one of the means employed to acquaint tourists with the scenic and other attractions of Sweden.

Nürnberg mit Fürth nebst Umgebung. Bearbeitet von Dr. Heinrich Heerwagen. Third Edition. 95 pp. Illustrations from Photographs and Plan of City in 5 Colours. Price, 75 pf. Verlag von Walter Seifert, Stuttgart, 1909. One of the Beckmann Guide Books whose numerous photographs show many aspects of the quaint old city. The index makes all the information easily accessible.

(*a*) Guide to Yarrangobilly Caves, New South Wales. (*b*) Guide to the Wombeyan Caves, New South Wales. Descriptive Text, Photographs and Maps. Geological Survey of N. S. W. Price, 1 s. each. These caverns are among the wonders of Australia and the guide books have been prepared by the Geological Survey for the increasing number of tourists.

Arizona Bibliography. A Private Collection of Arizoniana. By Dr. J. A. Munk. Second Edition. 98 pp., Los Angeles, Cal., 1908. A list of publications

relating to Arizona, collected by Dr. Munk in about 25 years and containing over 3,000 titles.

Portugal. Introducção Geographica. By Silva Telles. 55 pp., Maps and Diagrams. Imprensa Nacional, Lisbon, 1908. The paper also appears in the book "Notas sobre Portugal." It is a concise and clear account of the main features of the geography of Portugal—political, physical, climatic, and economic, with diagrams and four fine maps in colours.

Iowa. The first Free State in the Louisiana Purchase. From its Discovery to the Admission of the State into the Union. By William Salter. 289 pp., Portraits, Plans, Appendix and Index. A. C. McClurg & Co., Chicago, 1905. The author, who has lived in Iowa for 61 years, gives in this volume the outcome of his studies of what is now Iowa, from 1673 to 1846, when it became "the first Free State in the Louisiana Purchase." It is interesting as a record of the exploration, the Indians, the Black Hawk and other wars, the white immigrants and their enterprises until the fair region was taken into the Union.

Persian Self-Taught. (In Roman Characters.) By Shayk Hasan. 96 pp. E. Marlborough & Co., London, 1909. Price, 2s. 6d. The primal purpose of the book is to supply a working knowledge of the Persian language for those who have not mastered the grammar but need to use the spoken tongue for purposes of business or pleasure. It, however, gives a grammatical outline, and classified lists of words, phrases and sentences of a practical character such as are most needed by travellers and students. The author says:

> The Persian language is very sweet and compared with other languages is easy to master. It has a complete literature of its own. It is spoken not only in Persia but also in Afghanistan and many parts of India, and is the official language of some of the courts of that country. It is also used in Turkish Arabia (Baghdad), and by educated people in Russian Turkestan. The study of Persian is almost essential to one who wishes to learn Hindustani and modern Turkish, as the former of these contains about 40 per cent. and the latter about 25 per cent. of Persian words.

Handbook of Cyprus. Sixth Edition. Compiled by Sir J. T. Hutchinson, M.A., Chief Justice of Ceylon, and Claude Delaval Cobham, C.M.G. xii and 135 pp., Frontispiece, 2 Maps and Index. Edward Stanford, London, 1909. Price, 2s. 6d. The Handbook has been thoroughly revised. It has long commended itself by the excellence of its sections on geography, geology, agriculture, flora and fauna, in addition to the variety of other information desired by travellers.

CURRENT GEOGRAPHICAL PAPERS.

NORTH AMERICA.

British Columbia. Ethnology.—Der "Kartensinn" der Kitonaqa-Indianer. Dr. A. F. Chamberlain. *Globus,* No. 17, 1909.

Canada. Railroads.—The Railway Development of Canada. Maps and Ills. Dr. G. R. Parkin. *Scott. Geog. Mag.,* May, 1909.

United States. Anthropology.—Race Problems in America. Franz Boas. *Science,* May 28, 1909.

United States. Railroads.—Twentieth Annual Report on the Statistics of Railways in the United States for the Year ending June 30, 1907. Interstate Commerce Commission, Washington, 1909.

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CANADA.—Standard Topographical Map. Quebec. (Montreal and Quebec Sheet.) Preliminary Edition. Scale, 1:500,000=7.8 miles to an inch. Department of the Interior, James White, Geographer, Ottawa, 1908. The well-known map of which this sheet forms a part is not a topographical map in the sense in which the word is now generally used in the United States and Great Britain, for the reason that surface forms are not shown. The map is, however, an excellent representation of political and cultural aspects.

CANADA.—Map of Parts of the Southwestern Coast of Hudson Bay, from York Factory to Fort Severn. Scale, 16 miles=one inch. Accompanies *Summary Report* of the Geol. Sur. of Canada, 1905. Ottawa. From a micrometer and compass survey, by Owen O'Sullivan, C.E. Shows limits of high and low tide and tree line.

CANADA.—Geological Map of portions of Hastings, Haliburton, and Peterborough Counties, Province of Ontario. (Bancroft Map.) Scale, 1:126,720=2 miles to an inch. 44° 30′—45° 5′ N. Lat.; 77° 10′—78° 15′ W. Long. By Frank D. Adams and Alfred E. Barlow. Geological Survey of Canada, Ottawa, 1905. 20 Tints showing distribution of geological formations; distribution of minerals indicated.

CANADA.—(*a*) British Columbia, Shuswap sheet. Geographical and topographical data. Scale, 1:253,440=4 miles to an inch. Contours of elevation, with 250 feet interval. By George M. Dawson and James McEvoy. Geological Survey of Canada, Ottawa, 1898. Economic minerals and glacial striæ in red. Roads, pack trails, exploratory routes, Indian villages, elevations and depths of water indicated; (*b*) same map geologically coloured, with explanatory geological notes on margin.

CANADA.—Map showing Elevators in Manitoba, Saskatchewan, and Alberta. Scale, 25 miles=1 inch. April 20th, 1909. James White, Geographer, Department of the Interior, Ottawa, 1909. Only towns containing grain elevators are shown, the capacity of elevators in each town being printed in figures. On the margin is a list of flour and oat mills in western Canada, with capacity in barrels per diem; also capacity of elevators throughout Canada.

CANADA.—Map of Alberta. No scale or explanatory matter on the sheet. Department of the Interior, Ottawa, 1909. Townships divided into sections. Railroads and drainage. The map gives a good idea of the rapidly increasing settlement along the three northerly lines of railway converging upon Edmonton.

SOUTH AMERICA.

BRAZIL.—Folha de Bragança. Scale, 1:100,000=1.5 mile to an inch. 22° 30′–23° S. Lat.; 3°–3° 30′ W. Long. from Rio de Janeiro. Contour interval, 25 meters. Edição Preliminar, 1909. Commissão Geographica e Geologica do Estado de S. Paulo. São Paulo. The latest sheet of this superior topographic map of the State.

AFRICA.

EGYPT.—Egypt. Scale, 1:50,000=0.7 mile to an inch. Sheets: III–I, N. W. III–I, N. E.; V–III, N. E.; V–IV, N. E. Survey Department, Egypt, Cairo, 1908–9. Price, 50 mills a sheet.

GERMAN EAST AFRICA.—(*a*) Baumwollbau als Zwischenkultur an der Usambara Eisenbahn; (*b*) Für den Baumwollbau belegte Ländereien am Rufiji. Without map net or scale. Beihefte aum *Tropenpflanzer*, Vol. 10, No. 3, Berlin, 1909. Black and white sketch maps illustrating cotton planting in German East Africa.

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ASIATIC TURKEY.—Route of Capt. S. S. Butler and Capt. L. Aylmer from Baghdad to Damascus via El Jauf. Scale, 1:2,000,000=31.56 miles to an inch. *Geogr. Jour.*, Vol. 33, No. 5, London, 1909. Illustrates Capt. Butler's paper describing the journey.

TIBET.—Sketch Map of part of Tibet showing the explorations and journeys of Dr. Sven Hedin, 1906–1908. Scale, 1:3,800,000=60 miles to an inch. *Geog. Jour.*

Vol. 33, No. 4, London, 1909. Illustrates Dr. Hedin's description of his journey. A note says that Dr. Hedin is alone responsible for the new names on the map.

TIBET.—Sketch Map of Southern Tibet. Scale, 1:7,500,000=118 miles to an inch. *Geog. Jour.*, Vol. 33, No. 4, London, 1909. Shows the water parting between the interior and the southern drainage according to Sven Hedin, Trelawney Saunders and Col. Burrard.

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AUSTRIA-HUNGARY.—Special Karte des Kreises Grätz. Scale, 1:100,000=1.5 mile to an inch. 3d Edition. Oskar Eulitz Verlag, Lissa i P., 1909. Price, M.O. 50. Five colours for hydrography, culture, boundaries, forests and heights. All information very clearly expressed.

GERMANY.—Deutschlands Gaue um das Jahr 1,000. Scale, 1:100,000=15.8 miles to an inch. Entworfen und gezeichnet von Otto Curs. *Deutsche Erde*, Vol. 8, No. 3, Gotha, 1909. The Old German "Gau" was distinguished as a judicial or a military district. Place names on the map are underscored in the same colour as the district to which they belong. Dr. Curs describes the map in detail.

ITALY.—Carte d'Italia. Scale, 1:200,000=3.1 miles to an inch. Sheets Belluno, Folio 5; Udine, F. 6; Brescia, F. 11; Verona-Padova, F. 12; Venezia, F. 13; Palmanova, F. 14; Parma, F. 19; Ferrara, F. 20: Chioggia, F. 21; Ravenna, F. 28. Instituto Geografico Militare, Florence, 1908. These are the first sheets of the new map of Italy which the Istituto Geografico Militare is now publishing. The map will be a very careful compilation from the data of the original survey sheets on scales of 1:25,000 and 1:50,000 upon which it is based. Each sheet covers an area embraced within 1 degree of longitude and 40 minutes of latitude, and the complete map will include 91 sheets. The central meridian of each sheet is an integral degree of longitude computed from the prime meridian of the Monte Maria Observatory, Rome. The relief of the land is shown by brown contours, emphasized at high altitudes by oblique light and shading. The elevation above sea level of a very large proportion of the towns is also indicated in meters, which is especially helpful in the lowlands where the contours are far apart. Forests are shown in green, and this is the prevailing tint on some sheets of regions where the wooded areas are especially extensive. Nine symbols are employed for cities and towns from over 50,000 to less than 2,000 population; and, where the area of a city is sufficiently extensive, the form of the municipality and even some indication of the street plan are shown. Every hamlet appears and even isolated edifices of importance; hydrography is in blue, railroads in red, and all other kinds of highways in black, with symbols indicating whether railroads have one or more tracks, whether footpaths are easy or difficult, etc. The contiguous territory of other countries is mapped with the same care and detail as far as it appears on the sheets. This work is calculated to serve admirably the purposes of the public and the general uses of the student of Italian geography.

SCANDINAVIA.—Missions catholiques des pays scandinaves. Scale, 1:2,200,000 = 34.7 miles to an inch. Supplement to *Les Missions catholiques*, No. 2,085, Lyons, 1909. The distribution of the vicariates, missions, stations, etc., is imposed in red upon a very excellent map of Sweden, Norway and Denmark.

ATLASES.

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dentale Francese e i Paesi della Guinea Superiore. Istituto Italiano d'Arti Grafiche, Editore, Bergamo, 1909. Price, 1 lira per part.

The atlas is to contain 36 coloured sheets, with about 100 black and white maps in the descriptive text. The size is small folio. Part 15 contains a map in colours of French West Africa and the Upper Guinea countries on a scale of 1:8,000,000, with insets of the coast lands between Cape Verde and Sierra Leone on double that scale. All the detail is very clearly expressed; the place names are well selected, railroads are in red, the northern limit of tropical forests in green, and six contours of the sea floor give depths to 4,000 meters. The results of the latest explorations are recorded. The descriptive text covers 20 pages, and is an excellent summary of the history, geography and statistics of the countries mapped. The whole work is to be recommended as a scientific and practical description of the Africa of to-day in its geographical, political and economic aspects.

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